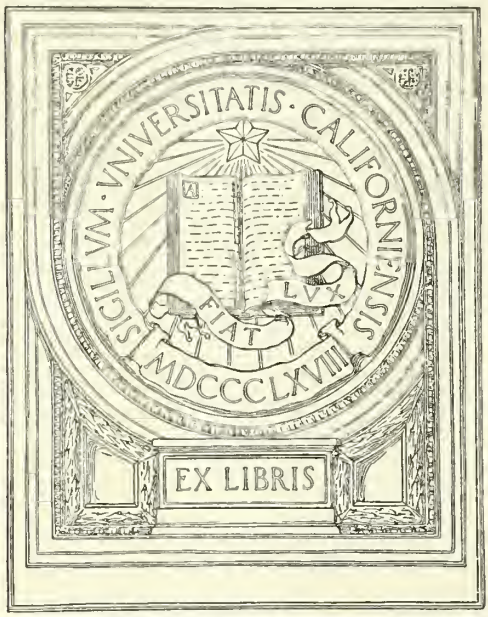
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DIAGNOSIS OF GLAUCOMA

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Duluth, Minnesota

OF all the causes of blindness in the adult, glaucoma ranks first in the United States. It is responsible for one-third of all blindness past middle life. More eyes are destroyed by this disease than by tuberculosis, syphilis and gonorrhea combined. It is estimated that there are nearly a quarter million people in the United States suffering from glaucoma. Of the 120,000 known blind in this country, 30,000 are blind from glaucoma. Most of these are receiving aid in the form of pensions for the blind. At one dollar per day this amounts to over ten million dollars annually. Thus, it will be seen, glaucoma becomes an economic as well as a health problem.

Our greatest problem, in glaucoma, is early diagnosis. It is possible to discover this disease before there is any loss of vision. The early symptoms are generally overlooked or ignored by the patient, however, and a high percentage of the patients, by the time they reach the ophthalmologist, have lost a large part of their vision. In a recent study of 1,876 glaucoma patients seen at Will's Eye Hospital in Philadelphia,[5] 784 eyes had vision reduced below 20/200 when first admitted. These eyes were industrially blind. DeGrosz,[3] who, during thirty-one years as head of the leading eye clinic in Budapest, operated 4,326 patients with glaucoma, declared that only 13 per cent came to him within the first month after the onset of symptoms.

As in cancer and tuberculosis good therapeutic results are contingent on early diagnosis. Crawford,[2] in a statistical study of glaucoma patients at the University of Minnesota Hospital, found that of those seen within three months of the onset of symptoms, 85 per cent obtained good results from treatment; while, of those cases seen from twelve to twenty-five months after onset of symptoms, only 33 per cent could be said to have had good results.

With these facts in mind we, in ophthalmology, are coming to you in general practice with an appeal for help in early diagnosis of this destructive disease. We believe that you are in position to materially improve these statistics. Only a small percentage of the people ever see the ophthalmologist and many of these are referred for specific reasons, while the great majority of the people, whether ill or not, pass through your offices. Much blindness will be avoided when the early signs of glaucoma are recognized in the general physical checkup and in examinations for jobs in industry and for life insurance made by you in general practice.

Early diagnosis is doubly important because, vision once lost from glaucoma, cannot be regained. There is at present no cure. At best we can only hold the ravages of the disease in check and preserve the vision that remains. The earlier the treatment is begun, however, the less is the irreparable damage to the eye and also the easier it is to bring under control the high intraocular tension which is responsible for the loss of vision.

We wish to point out some of these early symptoms and suggest ways in which you will be able to recognize the disease in the stage when good vision can be preserved.

Read at the annual meeting of the Minnesota State Medical Association, Minneapolis, Minnesota, May 18, 1943.

All glaucoma may be roughly divided into two groups:

I. Primary (simple, chronic or compensated)

II. Secondary

A. That due to mechanical obstruction to the outflow of aqueous with inflammatory products or to sudden closure of a narrow anterior chamber angle. (Acute inflammatory, congestive or uncompensated)

B. That due to congenital defects in the drainage system. (Congenital glaucoma, buphthalmos)

C. Glaucoma secondary to—

1. Intraocular tumor
2. Iritis with closure of pupil
3. Obstruction of venous drainage from the eye (thrombosis of retinal vein)

In this discussion we will consider, in the main, the primary or compensated type. The others will be discussed but briefly here.

Acute inflammatory glaucoma is a rare disease. The symptoms are excruciating pain, violent congestion, steamy cornea, sudden loss of vision, often to the point of complete blindness, widely fixed pupil and an extremely hard eye ball. These patients are so violently ill that should any of you see one you would lose no time in getting him to the nearest ophthalmologist for appropriate treatment. This type therefore offers little difficulty in diagnosis. After such an acute attack, however, iris adhesions may be present leading to a mistaken diagnosis of simple iritis. Mild congestive attacks, without pain or any of the other above symptoms, may occur in simple glaucoma. During these the tension is higher than usual and the vision somewhat blurred.

Unusually large, attractive eyes or a corneal haze seen in a young baby should lead to suspicion of congenital glaucoma or buphthalmos and direct one to investigate the intraocular tension. Fortunately recent developments in surgery[1] hold promise of cure for these unfortunate children.

Glaucoma resulting from intraocular tumor, hemorrhage, iritis or retinal venous thrombosis usually is associated with marked loss of vision.

In primary or compensated glaucoma, to which we will now devote our discussion, the onset is insidious. Herein lies its chief mischief and the reason it is so often overlooked in the early stages. There is no pain, or no more than a slight discomfort or sensation of fullness in the eye. This may be noted after a full meal, on taking stimulants, or after viewing a movie. Delayed adaptation of the eyes to darkness may, but does not necessarily, indicate early glaucoma. This may be demonstrated when one encounters difficulty in finding a seat on first entering a darkened theatre. A slight blurring of the vision is commonly complained of and glasses are sought to correct this. Several pair of glasses may be prescribed by optometrists before the help of an ophthalmologist is sought. On occasion bright rings or halos may appear around lights. This usually occurs when the tension is sufficiently high to result in edema of the cornea.

Increased intraocular tension is the most characteristic feature of the disease and is responsible for most of the signs and symptoms. The tension varies with the time of day, being highest in the early morning hours before arising, tapering off during the day and beginning to rise again on retiring. This is thought to be largely due to absence of the massaging effect of the extraocular muscles in sleep and its presence when awake.[4] The fact that the pupil dilates when the eyes are closed in sleep is also probably a factor. The tension is increased in excitement and emotion or on physical effort. It is elevated by taking stimulants, particularly coffee and tea or on rapidly drinking large amounts of water.

The size of the pupil is a fairly good index of the height of the tension, a wide pupil indicating high tension and vice versa. Any drug which dilates the pupil, such as belladonna, cocaine, atropine, scopolamine or benzedrine, is almost sure to produce a sharp rise in tension in a glaucomatous eye. This is brought about by thickening of the iris at the shallowest area in an already shallow anterior chamber angle, thus blocking the flow of aqueous to the normal outlet through the canal of Schlemm. Drugs which contract the pupil, such as pilocarpine and eserin have the opposite effect and tend to lower the tension by thinning out the root of the iris and thereby opening the anterior chamber angle.

The intraocular tension is measured by the ophthalmologist by means of an instrument, the tonometer. By constant practice, however, a fairly accurate estimate of the tension can be made with the fingers. By resting the last three fingers of both hands on the patient's forehead and the two thumbs on the cheek below the eye, the two index fingers are then used to palpate the sclera through the lid as the patient's gaze is directed downward. The same alternate pressure is made that one uses to test for fluctuation in a suspected

abscess. Repeated palpation at every opportunity will soon give the "feel" of the normal tension and enable one to recognize any appreciable variation from this.

The normal tension ranges from fifteen to twenty-five mm. of mercury as measured with the tonometer on the cornea. If the tension remains much above the normal for very long, permanent injury to the optic nerve fibers results. The same result ensues following repeated sharp, transient elevations of the tension. Undue stretching of the nerve fibers and pressure on them as they bend over the sharp edges of the scleral ring at the disc results in their atrophy and death of their ganglion cells in the retina. Due to a peculiar anatomical arrangement, the fibers which arch temporalward above and below the disc are the first to suffer. This produces an elongation of the normal blind spot in the visual field, an important early diagnostic sign. Further extension of this damage produces a sector or step-like defect in the nasal half of the field. Still further damage results in concentric contraction of the entire field. While there may be frequent, transient blurring of the vision at any stage, the central vision is generally good until late in the disease, even when only a very small field remains. The visual fields for colors are lost before the form fields, the blue being the first to show contraction. The ability to recognize blue may be entirely gone before the form fields are appreciably contracted. This I believe to be an important sign in early diagnosis and it requires no special training or equipment to test for it.

It is recommended that the internist and the general practitioner have some form of tangent screen for charting the visual fields. These may be obtained at any optical supply house at small cost or one can easily be made at nominal expense. The charting of the visual fields is not only useful in the diagnosis of glaucoma but is extremely valuable in the localization of intracranial lesions which compress the optic tracts or centers. Any textbook on perimetry will furnish all the instruction necessary to the technique of charting the fields.

Continued high intraocular tension soon results in excavation of the optic disc. One must distinguish this from the normal, or physiological, depression or cup which varies greatly in size. To study this pathological picture requires the use of the ophthalmoscope. Everyone in general practice should learn to use this important diagnostic instrument. The detection of glaucoma is only one of its many advantages. A general physical examination is not complete without a study of the ocular fundi. The normal physiological cup is generally funnel shaped with sloping walls, is near the disc center and never reaches to the margin. The vessels show little or no deviation from a straight line as they cross the disc margin. In glaucoma the cup is enlarged, reaching, early in the disease, to the very edge. The vessels, as they cross the border, appear to curve sharply and drop away, as they follow the undermined edges, to reappear again at the bottom. When the bottom of the cup is brought into focus the white lattice-like lamina cribrosa is clearly seen. When one has become familiar with the normal fundus picture it will be noted that the retinal arteries normally show, in the adult, little or no pulsation; while in the glaucomatous eye, with high tension, a bounding pulsation is seen.

Let me here warn against the use of any drug to dilate the pupil where there is the least suspicion of glaucoma. Such ill considered use of a mydriatic may precipitate an attack of congestive glaucoma which would be difficult, if not impossible, to control without surgery. If the pupils are small, allowing the patient to sit in the dark for a few minutes will often bring about dilation sufficient for examination of the fundus. Atropine should not be used in the eyes of an adult over forty except under the supervision of an ophthalmologist.

Not infrequently cataract accompanies glaucoma and the physician is led to assume that the patient's blindness is due wholly to the former. Such a patient was recently referred to the writer for cataract surgery. The tension was found to be extremely high and the vision reduced to light perception. This patient had first noted impairment of vision one and one-half years before. When seen by the writer it was too late for cataract surgery. If the estimation of the intraocular tension is made a part of the routine examination such a tragic error will be avoided.

Most cases of glaucoma are discovered by the ophthalmologist when they come for refraction. Nearly all of them feel that they haven't had a proper refraction and that all they need is a little stronger pair of glasses. Unfortunately many of them will wander from one optometrist to another over a period of a year or more and finally come

with several pair of lenses, none of which has been satisfactory. The true cause of their difficulty has been completely missed. The optometrist is not trained to diagnose disease. The practice, therefore, of some medical men of referring patients to optometrists for refraction must be condemned. It is only fair to the patient that he have a thorough and complete examination of his eyes which every ophthalmologist routinely makes at the time of refraction.

All treatment for glaucoma has, as its objective, lowering of the intraocular tension to within normal limits and keeping it there. If the tension can be lowered and kept within normal limits with miotics and the patient is intelligent and cooperative this is the course followed. In advanced cases miotics will often not control the tension. In others the patients will not coöperate. Surgery must then be resorted to. In general, surgery consists either of procedures which aim to open the anterior chamber angle to afford better drainage of aqueous through the normal route or fistulizing operations by which the aqueous is diverted into the subconjunctival space to be absorbed there. Some operations combine these two principles. More than one operation may be required. The earlier in the disease the operation is performed the more successful is the result.

When the tension is once normalized the patient's life and habits must be regulated as long as he lives. It should be remembered that primary glaucoma is never cured. Any vision lost through atrophy of the nerve elements is not regained. However, if the tension is kept under control, either by means of miotics or surgery, good visual function may often be maintained indefinitely. Treatment, therefore, is never ended. Periodic examination of the visual acuity, the fields of vision and the intraocular tension must be regularly made. The patient can never safely be discharged from observation. To ignore this fact often leads to a false belief, by the patient, that he is cured and to neglect of his treatment. Stopping the treatment generally results in rapid deterioration of the vision and, often, a very painful, blind eye.

Here the general practitioner can further cooperate by keeping in contact with the glaucoma patient and seeing to it that adequate supervision is not neglected. It is to be hoped that some follow-up method may be instituted in Minnesota whereby the glaucoma patient may, through education and persuasion, be made to understand the gravity of his disease and the importance of regular visits to his ophthalmologist for control of the tension. "It is better and more economical to prevent blindness than to subsidize the blind."[6]

Summary

Statistics are quoted to show that glaucoma is becoming an important economic as well as a health problem in the United States. The importance of early diagnosis in the control of this disease is stressed. The general practitioner is in position to play an important role in its control. A brief review of the leading signs and symptoms is made to aid the general practitioner in detecting glaucoma in the early stages when treatment is effectual in controlling the tension and preserving useful vision. A plea is made for an estimation of the intraocular tension and a study of the ocular fundi with the ophthalmoscope as routine procedures in every general physical examination.

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To help quiet the convoy-worn nerves of American merchant seamen, the Medical and Surgical Relief Committee of America has donated to the War Shipping Administration 4,000 capsules of sedatives requested for use in recuperation centers in England and North Africa, according to a report by Dr. Joseph P. Hoguet, medical director of the Committee.

Many seamen resting in War Shipping Administration convalescence posts abroad have manned ships loaded with explosives, many more have travelled through sub-infested waters, and others are survivors of torpedoed merchant vessels, Dr. Hoguet explained. Tense from the memory of grim ocean-crossings, from the shock of combat or shipwreck, these men cannot sleep. Some become so restless and upset, they are unable to calm down during the daytime.

According to Dr. Hoguet, doses of mild sedatives, such as those contributed by the Committee, relax strained nerves and ensure a normal night's rest.

EPIDEMIC KERATOCONJUNCTIVITIS

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EPIDEMIC keratoconjunctivitis has existed under various forms and clinical entities for many years. The first recorded report was given by Von Stellwag in 1809 in which he describes a peculiar form of corneal inflammation following a mild conjunctivitis and in which macular opacities occurred. He called these lesions "nummular" because of their coin shape. Shortly after this, Fuchs describes a "superficial punctate keratities" in which several small round disclike opacities formed after an acute catarrhal conjunctivitis. Interest in this disease was revived by the occurrence in 1941 of an epidemic of acute inflammatory eye disease in the San Francisco Bay area. This epidemic was soon recognized as a clinical entity in the shipyards of this vicinity and other similar plants along the Pacific coast and was known as "shipward eye." It soon became a serious menace because of the loss of many hours from the work of building ships, and because of its spread to other industrial plants.

The symptoms of the disease among the workers varied a good deal both in their number and intensity. These symptoms somewhat in their order of appearance were as follows.

1. Conjunctivitis of the common catarrhal or follicular type in which burning, smarting, itching and an irritation as though a foreign body was present. Some patients complain of the eyelids sticking together in the morning.

2. Edema of the caruncle spreading to the mucous membrane of the lower lid and sometimes to the entire bulbar conjunctiva giving it a glassy appearance and occasionally presenting small subconjunctival hemorrhages. This edema may be limited to the corneo-scleral margin (limbus).

3. Edema of the lids and skin with drooping of the lower lid.

4. Intense hyperemia with lacrymation and occasionally a thin pseudo-membrane attached to the lower cul-de-sac.

5. No discharge and occasionally a scant secretion.

6. Dull pain in the eyeball affected, but a majority of cases suffer very little discomfort.

7. Involvement of pre-auricular lymph nodes which hypertrophy and are usually very sensitive. Occasionally the cervical and submaxillary glands are affected.

8. Appearance of punctate or disclike opacities in the cornea with blurring of vision.

The disease is usually monocular but about one fourth develop bilaterally. The intensity of the symptoms varies a good deal and all symptoms do not occur in each individual case. Corneal opacities may be very numerous, sometimes only a few, and they are usually located just beneath Bowman's membrane (anterior limiting membrane of the cornea) though they may even involve the posterior limiting or Descemet's membrane. An outstanding characteristic of the keratitis is lack of ulceration and vascularization. About 75 per cent of all cases develop keratitis and when it occurs, the vision is impaired for a period of three to six weeks. Later in the course of the disease when the cornea is more extensively involved, there is usually severe pain of a stabbing character, intense photophobia which seems to be out of proportion to the active inflammation and lastly a spasm of the orbicularis muscle in nature's attempt to protect the eyeball.

The etiology of epidemic keratoconjunctivitis is still somewhat obscure, but most experiments clinically and in the laboratory indicate that it is a virus disease.

It might be well at this point to define a virus as "a group of agents lying near or below the limits of resolution of the ordinary compound microscope which are usually able to pass filters retaining ordinary bacteria and which can be cultivated apart from the animal or plant body only in the presence of living cells." Viruses may also be considered as minute bacteria which have lost substance and enzyme systems in becoming obligate cell parasites, and are dependent on the metabolism of the host cell for all but certain highly specialized functions such as reproduction and production of toxin. Many of our common maladies of today such as head colds, certain types of pneumonia, anterior poliomyelitis, measles, and mumps are virus diseases. The only virus diseases primarily in the eye are trachoma

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and epidemic keratoconjunctivitis; although, many forms of herpes, inclusion blenorrhea and measles have major ocular manifestations. Bacteriological examinations in keratoconjunctivitis have been essentially negative. The disease could not be reproduced in another host with any organisms found. Monocytes in large numbers are found in conjunctival scrapings. Filtered material from diseased tissue has caused positive reactions in other patients with development of typical symptoms of keratoconjunctivitis, and when injected into the cerebrum of Swiss mice produced, repeatedly, similar lesions throughout the brain but in no other organs of the body. Several investigators consider that a herpes virus is the etiological factor and that this disease is closely related to herpes zoster, dendritic keratitis and disciform keratitis. Other causes mentioned in the literature are allergy, nutritional disturbances, parasitic disease, injuries to the cornea or conjunctiva, and upper respiratory infections.

The progress of epidemic keratoconjunctivitis is fairly rapid and usually self-limited, terminating in macular opacities of the cornea. Full recovery of vision usually takes place but in a very few exceptions the maculæ persist in the pupillary area. Total loss of useful vision is a possibility. The prognosis, therefore, for eventual full recovery is very good. The main complication is a coalescence of these disclike spots or areas and possible fistulous openings through the anterior corneal surface.

Treatment of the disease is essentially symptomatic in the early stages and consists of hot or cold packs (whichever gives most relief) for ten minutes every two hours. Gentle, warm irrigations with boric acid or saline solutions are helpful. Atropine (1 per cent) and dionin (1 to 5 per cent) may be used as indicated. Bandaging the eye may be beneficial and causes no harm because there is little, if any, secretion present. Sulfathiazole ophthalmic ointment (5 per cent) should be used several times a day with special care that it is applied to the lid margins. A 4 or 5 per cent solution of sodium sulfathiazole sesquihydrate has been highly recommended. Silver nitrate may be applied to the palpebral conjunctiva, especially when granular. X-ray therapy given on three successive days shortens the period of convalescence and is considered excellent treatment. Due to the fact neither local nor general treatment has had much effect on the course and duration of the disease, recent investigations have been made with regard to the blood serum of recovered patients. This serum was found to contain a substance which will neutralize the virus in mice. It was also found that the recovered patients gradually built up a protective substance after the conjunctival phase of the disease has disappeared. Blood was drawn from these patients when this titer of neutralizing substance was highest and injected into a group of ten patients, nine of them showing striking clinical improvement soon after the injection. This group of cases was small and without controls, but the results were strikingly successful when it is considered that there is no direct ratio between the intensity of clinical symptoms and the duration of the disease.

The necessity of standard, accurately titered convalescent serum was emphasized. This method of treatment obviously would be difficult to carry out in private practise, but it suggests the possibility of a specific treatment. In the state of California, a ruling was recently made that it was an industrial disease and as such would be under the control of the State Industrial Accident Bureau. This should be a wonderful opportunity to check up on the convalescent serum treatment of keratoconjunctivitis. Proper attention to hygienic measures with regard to the patient and his surroundings as well as isolation in his work and treatment are very essential.

In our locality, allergic keratoconjunctivitis is the disease most likely to simulate epidemic keratoconjunctivitis. However, it has the following differential characteristics: (1) there is usually a definite history of sensitiveness to drugs, cosmetics and foods; (2) it is not epidemic; (3) conjunctival scrapings show eosinophils; (4) there is a tendency to recurrence when the patient is not properly desensitized.

Summary

Epidemic keratoconjunctivitis is a disease which assumes importance at this time because of its prevalence during the war period and in war production activity. It is caused by a specific virus and characterized by acute conjunctivitis, edema of the lids, hyperemia, no discharge, preauricular adenitis and formation of maculæ in the cornea. Symptomatic treatment gives relief, but the disease is essentially self-limited except for possible treatment with convalescent serum. Prog-

nosis is good unless impairment of vision persists due to opacities in the cornea.

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FOREIGN BODIES LODGED IN THE AIR OR FOOD PASSAGES

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FOREIGN bodies are accidently swallowed or inhaled very frequently. Most of them are coughed out at once or pass on through the intestinal tract and do not become lodged. The newspapers almost daily refer to some such accident and occasionally report the death of the victim before medical aid could be obtained. This publicity undoubtedly accounts for the fear and anxiety of patients and their relatives when a foreign body is aspirated. As a matter of fact, once the foreign body has become lodged, the patient is rarely in an emergency condition. Ill-advised attempts to remove the foreign body are more likely to cause disaster than the presence of the foreign body itself. Before the days of the x-ray and bronchoscope, statistics seemed to prove that a foreign body in the bronchus or esophagus had best be left alone, because more patients recovered when no attempt at removal was made.

Now, we expect foreign bodies to be safely and promptly removed. Because this is being done so successfully, we are losing our fear of mainipulations carried on within the trachea and bronchi. Obstetricians catheterize the newborn baby's trachea to aspirate secretion: the anesthetist inserts tubes to deliver his anesthetic intratracheally and he aspirates the bronchi quite routinely after prolonged anesthesia; the roentgenologist drops lipiodol into the bronchi; the chest physician and the chest surgeon are using the bronchoscope more and more frequently and possibly the intern or nurse may soon be doing routine bronchial aspirations. Rarely will any of these attempt the removal of a foreign body. They realize that the mechanical problems involved are more important than the mere passing of a bronchoscope. Quite certainly they should not attempt the removal of a foreign body from the esophagus because of the greatly increased hazard.

Esophagoscopy is much more dangerous than bronchoscopy because the esophagus, being a soft muscular tube, freely movable and with no constant lumen, is liable to perforation when a long rigid instrument is inserted.

The study of foreign bodies has contributed a great deal to our knowledge of the anatomy and pathology of the bronchi and lungs. It has been pointed out that each branch of the bronchus supplies ventilation and drainage to a definite segment of the lung. A generally accepted terminology is being worked out at present which will correlate the site of a bronchial lesion with the peripheral distribution of its effect.

We now recognize that lung disease produced by a foreign body is due to bronchial obstruction. The knowledge of the definite effects on the lung, produced by bronchial obstruction, has considerably influenced the diagnosis and treatment of pulmonary diseases.

From the accompanying table certain facts may be established. More foreign bodies occur in children than in adults. Foreign bodies are found in the air passages of children nearly ten times as frequently as in adults, while foreign bodies become lodged in the esophagus of adults more often than in children—about four to three.

Food eaten at meal time may contain a for-

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eign body, such as a bone. This type of foreign body is found almost exclusively in adults. They often masticate poorly, usually because of poor dentistry, and swallow hastily. Children's food is carefully prepared and they are watched while eating. I have removed 179 such objects from adults and only fourteen from children. Only three of the entire group were in the air passages.

Nuts, seeds or other vegetable objects, not swallowed at meal time, occur almost entirely in children under two years of age. Of 168 such objects, 156 were in children and only three were in the esophagus. Ninety-one were peanuts. There is no specific reaction produced by peanuts. Any foreign body in this group may set up as violent a reaction.

Metallic objects, as coins or pins, are swallowed about ten times more frequently by children than adults. They become lodged in the esophagus about twice as often as in the bronchi. Youngsters pick up these things and put them in their mouths; adults do not.

A foreign body becomes lodged in the esophagus because it is large, has sharp points or serrated edges which catch in the folds of the esophagus or because the esophagus is narrowed as a result of preëxisting disease, such as spasm, stricture, or tumor. The symptoms are substernal discomfort, difficulty in swallowing or pain on attempting to do so. A scratch caused by a foreign body in passing, frequently results in pronounced dysphagia, but rarely persistent pain. This is of considerable diagnostic importance. It is rare for a foreign body to remain in the esophagus for years as may occur in the bronchi.

Of foreign bodies in the air passages about 5 per cent lodge in the larynx, 10 per cent in the trachea, and 85 per cent in the bronchi.

ANALYSIS OF 567 FOREIGN BODIES

		Food					Metallic			
		Meal time			Not meal time					
Number of Cases		Bones	Meat	Others	Peanuts	Others	Safety pins	Coins	Dental	Others
Children										
Air way	206	2	0	0	91	63	11	2	1	36
Esophagus	141	6	5	1	0	2	34	50	0	43
Adults										
Air way	23	1	0	0	1	10	2	0	4	5
Esophagus	197	135	36	7	0	1	4	2	3	9

One group of such foreign bodies originates from within the chest itself and are not aspirated. Mucous plugs occur in postoperative atelectasis, acute laryngo-tracheo-bronchitis or other infections and after the removal of foreign bodies. Diphtheritic membrane or blood from a pulmonary hemorrhage may obstruct. Ruptured peribronchial lymph nodes may contain broncholiths or granulation tissue. A tumor may slough and act as a foreign body.

Foreign bodies originating from outside the lung and aspirated include stomach contents, particularly during anesthesia or intoxication, and dental objects such as plates and dentures.

Small metallic objects such as straight pins do not cause obstruction of the bronchus. Quite often no symptoms are noticed and the object may remaain many years without the patient realizing it. I saw one patient, a seamstress, who had about twenty-five pins scattered through her bronchial tree. She was quite symptom free and the pins were discovered on routine chest x-ray. Eventually these objects may cause some local reaction which will obstruct the bronchus and produce symptoms such as bloody sputum and cough. A lung containing an unknown foreign body may not recover from an infection in the

usual manner. An x-ray is taken and the foreign body discovered.

Large foreign bodies will cause obstruction of varying degree. Sudden complete obstruction results in atelectasis. Complete occlusion of the trachea with bilateral atelectasis is fatal. If the main bronchus is obstructed, unilateral atelectasis results. The most common object causing this is a navy bean which swells rapidly and is the most dangerous of all foreign bodies. If the foreign body totally obstructs a secondary bronchus, one lobe of the lung may become atelectatic.

Partial obstruction is much more common than complete. It results in the well-known obstructive emphysema. Air can get into but not out of the lobe or lung and becomes trapped, due to the valve-like action of the foreign body. X-ray films taken at the end of expiration show that the obstructed part of the lung contains more air than the unobstructed portion, because the air cannot get out. This finding is positive proof of obstruction in the bronchus.

If bronchial obstruction persists, drowned lung, abscess, bronchiectasis or gangrene develop. True pneumonia is rare.

Symptoms.—By far the most constant symptoms are cough, wheeze, and dyspnea. The cough is often intermittent and noisy and changing position may increase it. The wheeze can be heard at the mouth and is both inspiratory and expiratory.

Any patient who chokes on a foreign body and then develops a cough and a wheeze, is almost certain to have the foreign body lodged in his air passages.

Dyspnea is an increase in the breathing effort. It may result in the ventilation of the lung being normal, increased or decreased. The clinical recognition of early anoxia is not possible, but when shallow and rapid breathing occurs, together with evidence of fatigue or exhaustion, it is time to do something in a hurry. Cyanosis, pain, hemoptysis, and other symptoms are less frequent.

Physical Signs.—The most constant sign is limited expansion of the affected lung. This is present even in the nonobstructing, symptomless, small foreign body deep in the lung.

Impaired breath sounds over the obstructed area is a most reliable sign and quite frequently present. The temperature, pulse and respiration are not diagnostic.

Diagnosis.—The history is invaluable and can be obtained in almost every case. The x-ray is also invaluable and often makes the diagnosis. When the history and symptoms are suggestive and the physical signs are confirmed by x-ray, bronchoscopy is always indicated. When the history is suggestive and no symptoms, signs nor x-ray findings are present a bronchscopy may be done, but it will usually be negative. Even bronchoscopy may not demonstrate a foreign body which is present. Foreign bodies of long standing may produce symptoms suggestive of almost every chest disease and should always be ruled out as a possibility.

Foreign bodies that have become lodged do not require emergency treatment, unless asphyxia is threatened. This may occur at once with immediate death. Usually the foreign body is aspirated into one bronchus and a period of relative comfort follows. Should it be dislodged and coughed into the trachea or glottis or fall back into the previously unobstructed bronchus both bronchi may be closed off. The foreign body itself may swell to such a size as to close off the trachea. A general rule is: remove all large foreign bodies and all organic ones immediately. Small metallic objects do not require emergency treatment. It is not advisable to wait for the foreign body to be coughed out as this occurs in only about 2 per cent of cases. Neither is it recommended that the patient be inverted as the foreign body may become impacted in the glottis.

Complications.—Perforation of the esophagus may result from a foreign body. The symptoms vary according to the level at which the perforation occurs. If in the neck, subcutaneous emphysema may be the only symptom or mediastinitis may develop. If lower down the pleural cavity may be directly involved, resulting in a pneumo-thorax, hydro-thorax or pyo-thorax. A tracheosophagal fistula may occur.

Case 1.—A man swallowed a fish bone. Several days later he developed a temperature, pain in his chest, a cough and some dyspnea. A diagnosis of mediastinitis was made by his internist and roentgenologist. The fish bone was removed from the middle portion of his esophagus. He went home against advice and did not

improve. Eventually he developed a mediastinal abscess which eroded his vertebræ and produced a total paralysis of his spinal cord. He died on the table as his mediastinum was being surgically explored. Hemorrhage may occur and be very alarming, even causing death.

Case 2.—A man about sixty-five years old swallowed a bone. Esophagoscopy was done elsewhere and hemorrhage occurred when the bone was grasped. He was then referred to me. I removed the bone and profuse hemorrhage occurred immediately. He stopped breathing but after a blood clot was removed from his trachea his respiration became normal and no further bleeding was noticed. He was kept in bed for two weeks without a recurrence of the hemorrhage and was sent home. He went to work and a fatal hemorrhage occurred.

Complications due to perforation of the air passages by foreign bodies may result in subcutaneous emphysema; pneumo-thorax, hydrothorax or pyo-thorax. Traumatic laryngitis in young children may occur, for which a tracheotomy may be required. A drowned lung or bronchiectasis is a most frequent sequella of a foreign body in a bronchus.

Mediastinitis demands prompt surgical treatment. The sulfa drugs have been a great help in this condition.

Technique.—In children a general anesthetic is always used. In no case have I seen any complications develop as a result of ether. I have seen cases where the lack of anesthesia caused the operator to traumatize his patient resulting in exhaustion and greater shock.

The occasional bronchoscopist is entitled to every advantage he can obtain. With his patient relaxed and under perfect control he can work much easier and more gently. It is bound to be more comfortable for a child to be asleep while a bronchoscopy is being performed. Contraindications to general anesthesia are cyanosis of marked degree and lung abscess or stricture of the esophagus when repeated treatments are necessary.

Local anesthesia in adults is quite satisfactory. The procedure is usually surprisingly comfortable for the patient. Plenty of preliminary sedation is helpful and in certain cases intravenous morphine is very satisfactory. Local applications of cocaine solution to the gums, pharynx, and larynx as well as instillation into the trachea is a routine. This is best done with the patient in the upright position. General anesthesia may be necessary and intravenous sodium pentathal is satisfactory, particularly if preliminary cocainization has been employed.

Frequently the bronchoscope can be passed directly into the trachea without using the laryngoscope to expose the glottis. A laryngoscope and a short forceps should always be handy to remove a foreign body if it should be stripped off at the glottis, as it is being extracted.

After the foreign body is removed a second examination should always be made to be sure that no fragment remains. A thorough aspiration of all pus and other secretions should be done at this time.

Good equipment is necessary, such as suction, batteries and lights. Elaborate technique is not needed nor are numerous instruments required.

A biplane fluoroscope is rarely essential, but when it is needed nothing can take its place.

The diagnosis is made earlier nowadays so neglected cases of long standing are seldom seen. This means complications and fatalities are becoming quite rare.

Case 3.—During the summer of 1942 the parents of D. S., aged seven, noticed that the boy appeared lazy. He would not do the things on the farm that he should do and was punished accordingly. Thinking that he might be sick he was taken to a doctor and a tonsillectomy was done. He made no improvement, was still listless, ate poorly and lost weight. Again he was taken to a doctor in another town and an x-ray of the chest was made because of a temperature and cough. This showed a metallic foreign body in the right bronchus. A bronchoscopy was done and a stricture of the right bronchus was seen, but no foreign body could be visualized. He was referred to me.

At bronchoscopy, with single plane fluoroscopic control, a forceps was passed through the stricture but the foreign body could not be grasped. The scope was removed and on the x-ray table the chest was percussed. Tympany was noted and on x-ray examination a collapsed lung was seen. Dr. Cohen was called and he used his pneumothorax machine in reverse and took out 800 c.c. of air from the chest. The lung expanded and remained so. Subcutaneous emphysema was present. The threatened mediastinitis was treated by large doses of sulfadiazine. His condition improved and in about two weeks from the original bronchoscopy a second one was carried out with biplane fluoroscopic aid. This time the forceps could be guided to the foreign body. It was grasped and pulled into the stricture of the bronchus. Here it was re-grasped and a successful extraction completed. His recovery was stormy but sulfadiazine again controlled his temperature and he left the hospital in good condition.

End Results.—There were seventeen deaths in my series of 567 cases. Nine were unavoidable. Three deaths were due to perforation of the esophagus and mediastinitis which occurred before the foreign body was removed.

Three deaths were due to bronchial foreign bodies before a bronchoscopy could be done.

Two deaths were from complications developing after a successful removal of the foreign body, one from the esophagus and one from the bronchus.

One death was from a foreign body which had been in a bronchus fourteen years and was impossible to remove. At post mortem it was found to be completely embedded.

In the other eight cases, death was due in three to the bronchoscopy itself. In five I was unable to remove the foreign body from the bronchus. These were among my first seventy cases.

Conclusions

Foreign bodies are frequently swallowed but few become lodged. Once they become lodged the emergency is over and time can be taken to effect a safe removal.

Esophagoscopy is more dangerous and difficult than bronchoscopy.

Foreign bodies occur more frequently in children and more often in the air passages.

Foreign bodies occur less frequently in adults and usually in the food passage.

Foreign bodies causing obstruction produce symptoms.

General anesthesia should be used in all children.

Local anesthesia should be used in all adults.

RECURRENT VENOUS THROMBOSIS: AN EARLY COMPLICATION OF OBSCURE VISCERAL CARCINOMA

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IN 1906 Haward reviewed the incidence of fatal venous thrombosis in 2,903 consecutive necropsies and found that carcinoma was second only to infections of the middle ear as the predisposing factor. In Barker's analysis of 166 cases in which peripheral thrombophlebitis complicated infectious and systemic diseases, carcinoma was the most frequently associated condition. After the study of 4,258 consecutive necropsies, Sproul reported that carcinoma of visceral organs was the most common cause of apparently idiopathic thrombosis of the veins of the neck, abdomen, pelvis and extremities.

The following quotation is from the lectures of Amand Trousseau delivered in 1862:

"When you are undecided about the nature of a disease of the stomach, when you hesitate between a chronic gastritis, a simple ulcer, and a carcinoma, a phlegmasia alba dolens occurring in the leg or arm will put an end to your indecision and you will be able to assert positively that a carcinoma is present. I have shown you analagous cases in my wards and I have asked you to notice that this obliterative phlebitis did not pertain exclusively to carcinoma of the stomach and that it might occur with cancer affecting any internal organ whatever."

Trousseau's observation was adequately confirmed, particularly by clinicians of the British Isles,[3,4,6] but in recent decades it appears to have been ignored for the most part. Constant improvement in the laboratory and roentgenologic methods for the early diagnosis of visceral carcinoma may account for this. However, it is worthy of emphasis that the spontaneous development of thromboses in the peripheral veins may be a definite presumptive sign of the presence of obscure visceral carcinoma. This phenomenon may occur at a stage too early for the detection of the neoplasm by most modern devices. Although the incidence of venous thrombosis increases with advancing cachexia from any cause, it appears that

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in visceral carcinoma such thrombosis in distant vessels may antedate any definite sign or symptom of the malignant neoplasm. The following cases illustrate the occurrence of this sequence of events.

Report of Cases

Case 1.—A married Jewess, aged sixty-six, registered at the Mayo Clinic, January 28, 1942. She complained of recurrently "inflamed veins" in the superficial tissues of one or both lower extremities. The symptoms had been present four months. She had been semi-ambulatory since the onset of the difficulty. The symptoms had subsided when the patient had rested in bed but they had recurred when she had attempted to resume her usual activities. Her temperature had been elevated occasionally (maximum 100.8°F.) but she had not had any chills. She had had slight orthostatic edema of the feet and ankles.

Careful examination, including roentgenographic study of the gastro-intestinal tract, had revealed only an asymptomatic "staghorn" renal calculus on the right side. There had been occasional microscopic pyuria.

The patient had no other spontaneous symptoms, but, on questioning, she stated that during the preceding six months itchy, scaly, hyperpigmented areas had developed and persisted in the axillary, antecubital and vulval regions and that more recently she had been bothered by soreness of the lips and mouth. Her son, a qualified dermatologist, had felt that the lesions were those of acanthosis nigricans. In addition, the patient stated that she had lost approximately 20 pounds (9.1 kg.) during the two months prior to her registration at the clinic. For a similar period, anorexia had been present, but the patient had no other symptoms referable to the gastro-intestinal system.

Examination revealed moderate obesity but evidence of loss of weight. The arterial pressure was 130 mm. of mercury, systolic, 80 mm. diastolic. The temperature was 99° F., the pulse rate 88, and the respiratory rate 20. Examination of the skin revealed lesions typical of acanthosis nigricans. There was a mild degree of cheilitis and the buccal mucosa was moderately swollen and erythematous. Examination of the heart, lungs and abdomen gave negative results. The left greater saphenous vein and some smaller tributaries in the region of the right ankle were thrombosed, cord-like and tender. There was no perceptible edema. A single indurated nodule, measuring 1x1.5x1 cm. was palpable in the left supraclavicular fossa.

Since the patient was dismissed within twenty-four hours of the time of her admission, laboratory studies were incomplete. Urinalysis revealed moderate albuminuria and approximately seven leukocytes in each microscopic field as viewed with the high power objective. No bacteria were found in the urinary sediment stained by Gram's method. Erythrocytes numbered 3,490,000 and leukocytes 7,200, per cubic millimeter of blood respectively. The blood contained 11.2 gm. of hemoglobin and 42 mg. of urea per 100 c.c. The sedimentation rate of the erythrocytes was 27 mm. within an hour. The Kline reaction of the serum was negative. The heart and lungs appeared normal roentgenographically. A large "staghorn" calculus was visualized in the region of the right kidney. Roentgenologic examination of the stomach was attempted but with unsatisfactory results and could not be repeated because of the patient's departure.

As it was felt that the evidence accumulated from the physical examination indicated the probable presence of metastatic carcinoma, the patient's relatives were advised that biopsy of the nodule in the left supraclavicular space would clarify the diagnosis. This was done following her return home and the tissue was sent to us. Microscopic study disclosed that it was a lymph node infiltrated with adenocarcinoma grade 3. The site of the primary lesion was undetermined.

Comment on Case 1.—In this instance, at the time the patient appeared at the clinic, ample evidence of the presence of carcinoma was available on physical examination alone. It is interesting that the first subjective indication of trouble was the development of "inflamed veins." The rather frequent association of acanthosis nigricans and intra-abdominal carcinoma had led her son to advise extensive periodic examinations, none of which had established a cause for concern until the development of peripheral thrombophlebitis. The enlarged left supraclavicular lymph node was a late development.

Case 2.—A man, thirty-seven years of age, registered at the clinic July 9, 1934. He complained of pain, which had been present in the upper part of the abdomen for two months and had been associated with aching and soreness in the calves of the legs for a month before the patient came to the clinic.

In the beginning, the abdominal distress had consisted essentially of a feeling of epigastric fulness, had appeared chiefly after the patient had retired each evening and had persisted for one to two hours. For a month before he came to the clinic, the abdominal distress had occurred throughout the day and night, had been sharper in character and sometimes had extended from the upper part of the abdomen to the nipple regions bilaterally. There had been no acute paroxysms of pain, and the patient had no other symptoms. For one month the patient also had been bothered by intermittent aching and soreness in the calves of the legs. Four days before he registered at the clinic, a tender red cord had appeared on the medial surface of the right leg. At no time had there been fever, chills or edema.

On examination, the patient's general appearance was good although he felt he had lost approximately 15 pounds (6.8 kg.) since the onset of his illness. The oral temperature was 98.8° F., the pulse rate 86, and the respiratory rate 18. The arterial pressure was 148 mm. of mercury systolic and 90 mm. diastolic. Examination of the heart, lungs and abdomen gave negative results.

One examiner, however, felt that he was able to palpate an indefinite mass deep in the left epigastrium. All phases of thrombophlebitis were present in the superficial veins of the lower extremities. On the medial surface of the right calf, a 6 cm. segment of the greater saphenous vein was acutely inflamed. There was no edema. The arterial pulsations were normal.

The blood contained 4,430,000 erythrocytes and 9,500 leukocytes per cubic millimeter. Of the leukocytes, 18.5 per cent were lymphocytes, 11 per cent monocytes, and 70.5 per cent polymorphonuclear neutrophils. Urinalysis gave normal results. The Kline reaction of the serum was negative. Roentgenographic examination of the thorax, stomach, gallbladder and colon also gave negative results. The results of complete urologic examination, including cystoscopy and retrograde urography, were considered normal. Analysis of the gastric contents after a test meal showed a value of 17 for the combined acidity, according to the method of Töpfer, but no free hydrochloric acid was present. The blood platelets numbered 250,000 per cubic millimeter of blood. The bromsulfalein test of liver function revealed grade 2 (on the basis of 1 to 4) retention of the dye. The value for serum bilirubin was 1.2 mg. per 100 c.c.

On July 7, 1934, the actively inflamed segment of the right saphenous vein was resected. Microscopic examination of the vessel revealed complete thrombosis with very little organization. There was a minimal inflammatory reaction in the medial and adventitial coats of the vein.

On July 25, 1934, an episode of hematuria occurred. This was thought to be the result of renal infarction secondary to venous thrombosis.

On August 3, 1934, all evidence of active phlebitis had disappeared and an exploratory laparotomy was performed. A nodular mass was found retroperitoneally in the left upper quadrant of the abdomen. Multiple nodules were present on the surface of the liver. Biopsy of one of these revealed the presence of adenocarcinoma, grade 4. It was thought that the malignant lesion had arisen from the pancreas. Surgical removal was impossible. The postoperative course was uneventful. The patient was dismissed August 14, 1934, and died at his home, September 6, 1934.

Comment on Case 2.—The development of "idiopathic" thrombophlebitis suggested the true nature of this patient's illness, whereas extensive study otherwise had failed. Biopsy of the involved veins showed a relatively bland thrombosis with only minimal organization and phlebitis, a picture distinctly different from true idiopathic recurrent thrombophlebitis (thrombophlebitis migrans).

Case 3.—A man, aged fifty-eight years, had been quite well until December 18, 1940, when unexplained painful swelling of the left calf had appeared. During the next three months repeated episodes of thrombophlebitis had occurred. These had involved in rapid succession the superficial veins of both lower extremities and the right basilar, axillary and subclavian veins. During this period, a solution of heparin had been administered, continuously, intravenously for ten days or more on two occasions. During these periods no thrombosis had developed but it had recurred when the administration of heparin was discontinued. He had had two episodes of severe pain in the thorax which had been thought to be due to pulmonary infarction.

He was admitted to the hospital on March 1, 1941. At that time he had no symptoms other than those previously mentioned. The temperature, and the pulse and respiratory rates were normal. The arterial pressure was 134 mm. of mercury systolic and 88 mm. diastolic. He was found to have marked dental infection. Râles were heard over the right side of the thorax posteriorly. The heart was normal on physical examination, as was the abdomen. Both lower extremities and the scrotum were edematous and slightly cyanotic. There was also a moderate degree of edema of the right side of the abdominal wall. Large collateral veins were visible in both legs and in the right anterior wall of the thorax. The right axillary vein was palpably thrombosed but there was no tenderness over the vein.

The blood contained 3,740,000 erythrocytes and 7,300 leukocytes per cubic millimeter. The results of urinalysis were normal. The sedimentation rate of the erythrocytes was 35 mm. within an hour. Roentgenologic examination of the thorax revealed a diffuse increase in density within the right lower lobe, which was interpreted as the result of the residuum of a pulmonary infarct. The Kline reaction of the serum was negative.

A solution of heparin again was administered intravenously at irregular intervals during the next two months. The course of the illness during this period was extremely stormy and was punctuated by two episodes of pain in the thorax, cough and hemoptosis. These attacks occurred when the administration of heparin had been discontinued temporarily. They were thought to be the result of pulmonary infarction after pulmonary embolism. The patient also had an episode of hemiplegia with aphasia; later, convulsions occurred. The latter ceased and the hemiplegia gradually disappeared. He gradually improved and was dismissed May 23, 1941, with no evidence of active thrombophlebitis or other symptoms.

On September 16, 1941, he returned to the clinic for reëxamination. At that time, he said that there had been no further symptoms of thrombophlebitis and that he felt well and was gaining weight. On examination, fulness in the right supraclavicular and axillary spaces was noted and prominent veins were present bilaterally on the anterior wall of the thorax and on both upper extremities. The percussion note was dull and breath sounds were diminished over the posterior portion of the lower lobe of the right lung. The blood contained 4,400,000 erythrocytes and 9,900 leukocytes per cubic millimeter. Examination of the urine did not reveal any abnormality. The sedimentation rate of the erythrocytes was 35 mm. in an hour. The value for the hemoglobin was 12.7 gm. per 100 c.c. One roentgenographic examination of the thorax a circumscribed area of density was

observed above the right hilus. The patient was dismissed. It was felt that the thoracic lesion was a residuum of an infarction.

He resumed his usual activities and regarded himself as quite well until April of 1942. After an infection of the upper part of the respiratory tract, edema of the face, fulness of the right supraclavicular space, fever and persistent non-productive cough developed.

Examination at the clinic April 12, 1942, revealed the picture of the obstruction of the superior vena cava. His face was diffusely swollen. The veins of the anterior wall of the thorax and of the upper extremities were quite prominent and a thrombosed vein was palpable in the left supraclavicular fossa. Breath sounds were suppressed over the posterior portion of the right side of the thorax. The leukocytes numbered 10,300 per cubic millimeters of blood. On roentgenologic examination, the superior mediastinum was rather markedly widened, with some infiltration of the right hilar region. After treatment with anticoagulants, heparin and dicumarol, his condition improved and he returned home.

On June 20, 1942, he died at home after cough with blood-stained sputum and extreme dyspnea had developed. At necropsy, a large, apparently bronchogenic, carcinoma was found occupying the superior mediastinum and almost completely occluding the superior vena cava and right main bronchus.

Comment on Case 3.—The correct diagnosis was not made in this case until very late. The first symptom was thrombophlebitis in a vein of the calf. This appeared eighteen months before death, and was followed by repeated widespread thrombosis elsewhere. The thrombotic phenomena occupied the center of the clinical picture until shortly before death. Although venous obstruction by the intrathoracic tumor may have been a factor in the production of the peripheral venous thrombosis, it would seem unlikely that it was large enough to produce venous obstruction during the first episode, considering the long period of survival and complete freedom from symptoms during a large part of the course of the illness. This case also illustrates the difficulty which may be experienced in establishing a diagnosis of primary pulmonary carcinoma in the presence of pulmonary infarction.

Case 4.—A married woman, sixty-two years of age, was seen at the clinic in 1924. Her symptoms from that time until 1932 had been attributable to moderately severe hypertrophic changes in the spinal column, achlorhydria and the presence of a poorly functioning gallbladder containing multiple stones. She had never thought her gastro-intestinal difficulties disabling enough to warrant surgical intervention.

In July, 1933, tonsillectomy was performed in an effort to relieve some of the distress resulting from the arthritic changes in the spinal column. At about this time, polydipsia and polyuria developed. They became slowly worse and she was admitted to the hospital September 11, 1933. Aside from these symptoms, the patient complained only of occasional postprandial distress, such as epigastric fulness, nausea and vomiting, which were particularly bothersome after the ingestion of meals rich in fats. This trouble, however, seemed no worse than previously and she had had no acute pain for at least one year.

On examination the patient appeared dehydrated. She was moderately obese. The skin and mucous membranes were "parched." She stated that she had lost approximately 20 pounds (9.1 kg.) since the onset of polydipsia and polyuria. The temperature was 97.4° F., the pulse rate 100 and respiratory rate 18. The arterial blood pressure was 144 mm. of mercury systolic and 82 mm. diastolic. The heart and lungs were normal on physical examination. There was moderate tenderness to deep pressure in the right upper quadrant of the abdomen. The results of examination of the pelvis and rectum were normal. A few small varicose veins of the leg were observed.

A diagnosis of diabetes insipidus was made. The daily output of urine ranged as high as 7,500 c.c. before treatment with pituitary preparations was instituted. The specific gravity of the urine was always less than 1.010, and the urine did not contain any sugar.

Only fair results were obtained in controlling the polyuria and polydipsia with various pituitary preparations. In addition the patient complained rather frequently of nausea and vomiting. She was dismissed to continue treatment of the diabetes insipidus as an outpatient and to reconsider surgical removal of the gallbladder should her condition permit.

She was readmitted to the hospital October 7, 1933, because of severe pain in the lower part of the left side of the thorax, which was aggravated by deep breathing or coughing. She was flushed and appeared acutely ill. The temperature was 101° F., the pulse rate 112, and the respiratory rate 20. The arterial pressure was 118 mm. of mercury systolic and 88 mm. diastolic. The physical findings were the same as they had been previously. No friction rub was heard.

The blood contained 4,720,000 erythrocytes and 17,900 leukocytes per cubic millimeter. The results of urinalysis were negative. When she was admitted to the hospital, the specific gravity of the urine was 1.013. Roentgenologic examination of the thorax revealed infiltration at the base of the left lung which was consistent with the picture of pulmonary infarction. On subsequent investigation, all blood cultures were negative, as were specific agglutination reactions. Examination of the sputum revealed no acid-fast bacilli or pathogenic cocci. The bromsulphalein test for liver function disclosed retention of the dye grade 2 (on a basis of 1 to 4). The electrocardiogram showed a diphasic T wave in lead 2 and inverted T wave in lead 3. A diagnosis of pulmonary infarction was made. Superficial thrombophlebitis developed in the right leg eight days after her admission to the hospital; this progressed and involved the entire length of the right greater saphenous. The involved vein was not tender.

On October 26, 1933, signs and symptoms of fresh pulmonary infarction developed. There was little or no change in the roentgenogram. Evidence of activity of the thrombophlebitis in the right lower extremity gradually subsided, but on December 12, the same process appeared in the left greater saphenous vein.

During the last two months of life, although the diabetes insipidus was fairly well controlled with pituitary preparations, the condition of the patient failed progressively. Her major symptoms consisted of nausea with occasional vomiting. There was no severe abdominal discomfort. Two weeks before her death, diffuse pitting edema of the lower extremities developed.

Necropsy was limited to the abdomen. She was found to have had a carcinoma of the gallbladder with metastasis to the regional lymph nodes, colon, common bile duct, suprarenal glands, kidneys, liver and body of the pancreas. The gallbladder was distended with 250 c.c. of cloudy bile and contained five mulberry stones. Organized or partially organized thrombi filled the lumens of the vena cava and the iliac and portal veins.

Comment on Case 4.—This case represents the more commonly recognized development of venous thrombosis with advancing cachexia. However, even in this instance the thrombosis should have served as an indication that there was a strong possibility of a visceral carcinoma.

General Comment

The factors usually held responsible for the development of venous thrombosis are alteration in the structure of the walls of the involved veins, circulatory stasis and alteration in the concentration of various constituents of the blood which lead to an increase in its tendency to coagulate.

Clinically, lesions of superficial thrombophlebitis associated with carcinoma are characterized by thrombosis of the vein with relatively little evidence of inflammatory reaction. Thus they can usually be distinguished from the lesions of recurrent idiopathic thrombophlebitis (thrombophlebitis migrans), and from those of superficial thrombophlebitis which occurs in thrombo-angiitis obliterans. The histologic picture also is quite different, and if there is doubt about the pathologic process in the vein, a biopsy will permit a definite differentiation. The histologic picture of recurrent idiopathic thrombophlebitis reveals a marked cellular organization of the thrombus with much fibroblastic proliferation and usually some giant cells. The media and adventitia are heavily infiltrated with lymphocytes and fibroblasts. In contradistinction, the histologic picture of thrombophlebitis associated with carcinoma reveals relatively few fibroblastic cells in the thrombus and only a minimal degree of inflammatory reaction in the medial and adventitial coats of the vein.

In the cases which we have reported here, the influence of mechanical factors cannot be absolutely excluded. However, detailed postmortem examination in many reported cases would indicate that venous thrombi may form in the absence of circulatory stasis or neoplastic obstructive invasion of the walls of veins. In a postmortem study of 200 cases of carcinoma of the kidney, Sproul found that the renal vein or vena cava was involved in 22.5 per cent of the cases; however, multiple or distant thrombosis had not developed in any of these cases. Sproul also reported that thrombosis was present in nine, or 56.2 per cent, of sixteen cases of carcinoma of the body or tail of the pancreas. In five, or 31.3 per cent, of the sixteen cases, thrombosed vessels were observed in various parts of the body. Widespread metastasis had occurred in only one of the sixteen cases. In cases of carcinoma of the pancreas it would seem difficult to explain the development of distant thrombosis on the basis of mechanical obstruction or invasion of the vessels alone. It seems reasonable to assume that some change in the coagulability of the blood must occur in many of these cases.

On the basis of data available at present, it is only possible to speculate as to the nature of these changes. The methods ordinarily employed for determining the coagulability of the blood have failed to demonstrate any consistent change in the reported cases. It is unfortunate that, while many procedures are available for measuring a decrease in the coagulability of the blood, there is none which provides a reliable index of an increased tendency to coagulation.

Trousseau felt that the increased tendency to thrombus formation was a characteristic of carcinoma in general and was not dependent on the involvement of any particular organ. The extensive study of Sproul, however, indicated that multiple thrombi are more prone to develop in association with carcinoma of the body or tail of the pancreas than they are in cases of carcinoma of other organs.

In the second of the four cases that we have reported in this paper, the carcinoma probably involved the pancreas and in case 1 the same organ was suspected by the process of exclusion. Metastatic carcinoma of the pancreas was present in Case 4. Sproul also noted a marked reduction

in the thrombosing tendency in the presence of jaundice. He suggested that alteration in the amount of pancreatic secretion, change in the amount of absorption of vitamin K, and other factors resulting from disturbed function of the upper part of the gastro-intestinal tract might indirectly influence the coagulability of the blood.

In cases of this type, further study of the constituents of the blood, with particular emphasis on the prothrombin factor, may elucidate the problem.

Conclusions

1. Visceral carcinoma is often the predisposing factor in the development of multiple, and sometimes distant, venous thrombosis. This seems particularly true in cases in which the neoplasm arises from or involves the body or tail of the pancreas.

2. In the absence of other obvious causative factors, the development of apparently spontaneous peripheral thrombophlebitis in a case in which the patient is fifty years or more of age, should suggest a careful search for visceral carcinoma.

3. The formation of a thrombus in many of these instances would appear to be the result of more than simple mechanical obstruction, circulatory stasis, or alteration in the structure of the vessel wall. Further study of the factors influencing the coagulation of the blood would seem indicated.

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HEMORRHAGE IN PULMONARY TUBERCULOSIS

Pulmonary hemorrhage is one of the most distressing phenomena encountered in medical practice. The patient is gravely alarmed and the physician is confronted by bleeding that comes from a point deep within a delicate organ enclosed in a rigid framework. To combat the bleeding there may be only slowly or doubtfully effective physiological mechanisms.

Psychological effects to one side, hemoptysis generally is indicative of serious pulmonary disease. It is recognized that unexplained blood-spitting must be considered due to tuberculosis until proved otherwise. However, occasional causes include such nontuberculous diseases as bronchiectasis, bronchogenic carcinoma, lung abscess, rheumatic heart disease and various minor nose and throat affections. People apparently in good health and presenting negative physical signs and few or equivocal roentgen findings represent especially puzzling problems when they report having coughed up blood.

Among 1,000 patients consecutively discharged from the Blue Ridge Sanatorium, Charlottesville, Virginia, only those were included in this study who gave a clear-cut history of spitting up one dram or more of blood, or who suffered a hemorrhage during their stay in the institution. "Streaking," "streaked sputum", and indefinite history of hemoptysis were excluded. In all, 905 cases of tuberculosis, made up of 424 males and 481 females, included 220 who had hemoptyses during the active phase of the disease. This is an incidence of 24.3 per cent, regardless of the duration of observation.

Some of the largest hemorrhages in this series occurred in a few patients showing bronchiectasis or rheumatic heart disease. Bogen, including instances of streaks and clots, found that over half of his hemoptysis cases expectorated less than two ounces of blood. The present study records 106 hemorrhages of stated amount, ranging from one dram to two quarts, the average being five ounces. This did not include repeated bleeding from the same individual on the same or subsequent days, since these were not felt to be distinct episodes, but more or less a continuation of the first. In approximately 40 per cent of the cases the episode of hemoptysis was repeated at least once.

Hemorrhage was the presenting symptom, often the initial evidence of trouble, in 60 cases. Perhaps nothing drives a patient to seek medical advice faster than the expectoration of a single mouthful of blood, although twenty-three patients did nothing about their initial hemorrhage.

When the local physician was consulted by persons with hemorrhage in cases of previously undiagnosed tuberculosis 70 per cent were properly diagnosed, though it is estimated that 84 per cent correct diagnoses could have been reached by further study.

Only forty-nine cases in the entire hemoptysis group failed to show a cavity on x-ray examination and of these 11 were found to be nontuberculous. No less than 83.4 per cent of the tuberculous cases with hemorrhage had a positive sputum! Of the 170 patients in this latter category, 159 had roentgenograms revealing consolidation, honey-combing, punching out or frank cavitation.

Correlation of hemoptysis with physical exertion, with direct chest trauma or with mechanical disturbance of the lung is possible in some cases, though hemorrhage may and often does appear when the patient is at rest, perhaps during sleep. In only twenty-eight cases in this study was there either a specific history of a precipitating factor or of its absence. In ten patients hemorrhage was related to one or more menstrual periods.

Among the graver consequences of pulmonary hemorrhage must be listed strangling and asphyxia from massive bleeding, fatal blood loss in the cachectic patient, and the commoner and ever-present danger that blood from a cavity which is generating a positive sputum will spread the infection to other parts of the lungs, giving rise to an acute tuberculous bronchopneumonia or a massive caseous pneumonia. Obviously, repeated episodes of blood-spitting multiply the chances for such complications to occur.—*George R. Minor, M.D., American Review of Tuberculosis, August, 1943.*

HISTORY OF MEDICINE IN DODGE COUNTY

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(Continued from December issue)

Dr. Frederick L. Riser (1858-1939) is mentioned[300] as having been in Kasson as early as 1877, as previously stated, but in 1877 he did not have the degree of Doctor of Medicine. He was never licensed to practice medicine in Minnesota.[40] Doctor Riser opened an office at Kasson in April of 1883,[117] but closed it and left Dodge County in August of the same year.[118]

Doctor Riser was born in Lansing, Iowa, on July 9, 1858, the son of Frederick Riser and Barbara Marti Riser.[246] Both his parents were born in Switzerland. The details of his early life are unknown, but on March 6, 1884, after he had left Dodge County, he was graduated from the old Homeopathic Medical College of Missouri at Saint Louis.[264] He was licensed to practice medicine in Iowa on December 26, 1886, and at the time he was living in his birthplace, Lansing.[264] He later removed to Nebraska, where he was licensed to practice medicine on September 24, 1891, receiving License No. 815.[285] He apparently practiced in both Lancaster County and Box Butte County in that state.[252] In 1906 he was living in McQueen, Arkansas. He was licensed to practice medicine in Colorado on April 5, 1910, and at the time he was living in Henderson.[246] He died in the Colorado General Hospital at Denver on April 28, 1939, of diabetes mellitus with gangrene.[301]

Dr. Osmon Franklin Way (1858-1936) was born on June 16, 1858, on a farm three miles north of Claremont in Dodge County, the son of Edwin F. Way and Ann Augusta Stevens Way.[302] His father was a farmer and merchant, a major in the War of the Rebellion, member of the Minnesota Legislature, and a probate judge and justice of the peace for many years in the county. Both Doctor Way's parents were natives of New Hampshire; his father had been born in Lempster and his mother in Charleston. The young man attended the local public schools, and was sent first to the Shattuck Military Academy at Faribault and then to the Owatonna High School. While he was in Owatonna he became acquainted with the veteran eclectic physician, Dr. Eli Martin Morehouse (1835-1891), first president of the old Minnesota State Eclectic Medical Society.[25] Doctor Morehouse was for some time the preceptor of Doctor Way, who taught school for a while and then in 1880 enrolled for the fall and winter terms at the State University of Iowa College of Medicine at Iowa City,[303] from which, however, he was not graduated. He was licensed to practice medicine in Minnesota on December 31, 1883, receiving License No. 591.[40] Prior to that time he had practiced for a while in Blooming Prairie in Steele

County, but in September of 1883, as previously stated, he settled in Claremont, where he opened a small drug store in conjunction with his medical practice.[119] He later became a registered pharmacist, but never forsook the practice of his profession. In January of 1884 he filed his certificate of licensure at the court house in Mantorville,[304] according to the stipulations of the medical practice act of 1883.[95] The young man had scarcely begun the practice of medicine when he encountered a patient in such a desperate plight that he had to call in his friend, Dr. Theodore L. Hatch (1848-1913) of Owatonna, a well-known eclectic practitioner.[54] This was on October 30, 1885, and the case itself was reported in 1886 by Doctor Hatch[305] to the old *Northwestern Lancet* of Saint Paul.

In February of 1891 Doctor Way went to the old Kentucky School of Medicine in Louisville.[306] He was graduated from this college with the degree of Doctor of Medicine on June 19, 1891.[307]

Doctor Way was keenly interested in physical medicine all his life. He studied that branch of medicine assiduously, and installed the first static machine to be used in Dodge County. He contributed somewhat to the medical literature, and was in the habit of delivering addresses at meetings of the Southern Minnesota Medical Association. Some of these papers were printed.[308,309] In 1910 he was elected president of the Southern Minnesota Medical Association. In Claremont Doctor Way was superintendent of the Sunday school and a member of the board of trustees of the Methodist Episcopal Church, health officer of the village most of the time, member of the village board of education for many years, and president of the local bank. He was a member of the Masonic fraternity, Modern Woodmen of America, and the United Workmen. He died of cerebral hemorrhage and arteriosclerosis at Claremont on February 21, 1936.[310] He was buried in Claremont.[307]

Dr. William H. Parker (1859-1913) was a partner of Dr. James A. Garver (1814-1901) at Dodge Center from 1884 to 1887, as has been said. He was born at Delhi, Delaware County, Iowa, on October 23, 1859, the youngest son of Samuel F. Parker and Mary J. Caswell Parker.[311] In the year of his birth his parents moved to Earlville, Iowa, and the boy was reared in that town, where he attended the public schools of the community. At the age of sixteen years he enrolled in a Methodist Episcopal seminary at Epworth, Iowa, and shortly thereafter he studied at Upper Iowa University at Fayette, Iowa. Then he attended the State University of Iowa College of Medicine at Iowa City, where during his first year he studied medicine with a preceptor. He was married to Miss Ida M. Rundell of Earlville on March 17, 1881.[311] Doctor Parker was graduated from this university on March 7, 1883, and he settled in practice at Fairmont, Minnesota.[120] He was licensed to practice medicine in Minnesota on January 21, 1884,[40] and on May 15, 1884, he became the partner of Doctor Garver at Dodge Center.[120] He left Dodge Center in 1887. Where he went it is not known, but in 1895 he was back in Earlville, Iowa. On January 10, 1895, he was licensed to practice medicine in Iowa.[264] Doctor Parker is known to have practiced medicine in Masonville, Iowa, for nineteen years,[312] but the dates of his tenure there cannot be learned at this time. In about 1898 Doctor Parker became a victim of pulmonary tuberculosis, and some years later he was afflicted by a nervous disturbance of some type. He died in the Minneapolis City Hospital on June 12, 1913.[312,313]

Dr. Charles W. Coleman (1855-1925) was born at Columbia City, Indiana, according to his son,[314] on November 13, 1855. He was the son of Alexander

Coleman, a native of Pennsylvania, and Anna Nelson Coleman, a native of Ohio. His parents moved to Milton Township in Dodge County when Doctor Coleman was a boy, and they settled on a farm. Young Coleman was reared in Dodge County, and attended the old State University of Iowa Department of Homœopathic Medicine at Iowa City. He was at that institution in 1882, but the State University of Iowa has no evidence that he was ever graduated with the degree of Doctor of Medicine.[129] At some time after 1882 (1885?) Doctor Coleman returned to Dodge County to practice medicine, and he was licensed in Minnesota by affidavit in 1887.[40] In 1886 it was reported[124] that Doctor Coleman had traded some land he owned in Kansas to Dr. Horace P. Porter (1839-1912) for a stock of drugs. This was in April of 1886. About a year later it was noted in a Hayfield item in the *Dodge County Republican*[315] that "Dr. Coleman reports considerable sickness," so it may be presumed that at the time he was practicing medicine. In May of 1888 it was said[316] that he had attended a medical convention in Saint Paul. The convention probably was the twenty-second annual session of the Minnesota State Homœopathic Institute at the Nicollet House in Minneapolis on May 15 and 16 of that year, since the Minnesota State Medical Society did not convene until June of that year. Doctor Coleman was not, so far as the authors are aware, a member of either organization.

Doctor Coleman, according to Giere,[153] was the first physician in Hayfield. He was also the postmaster in that village. He resigned the position in 1894[317] to move to the farm in Milton Township which he had inherited from his father. In 1900 it was noted[318] that he had rented his farm to a tenant and that he proposed to go to North Dakota, but in 1904 he was in Pine Island, where he operated a real estate and insurance business. He stayed in Pine Island for eight or ten years, and then went to International Falls. In 1918 he was in Douglas County, Oregon. He was never licensed to practice medicine in that state.[193] Later he removed to Billings, Montana, where he died in Saint Vincent's Hospital on November 1, 1925, at the age of seventy years.[319] He was never licensed to practice medicine in Montana,[320] and it is believed that he never practiced medicine after he left Hayfield in 1894.

Dr. John Connell McMartin (1863-1890) was born in Ripley Township, Dodge County, Minnesota, on June 4, 1863, the son of Peter McMartin and Jane Connell McMartin.[321] His father was a native of Canada who had come to Dodge County in 1858, where he purchased a farm in Ripley Township.[322] His mother was a native of Scotland.[322] Doctor McMartin's mother died in about 1865, and the boy was reared by an aunt and uncle, who likewise owned a farm. Doctor McMartin's brother[321] said that the lad had had a desire to become a physician ever since he was a small boy, and while Doctor McMartin attended the Mantorville High School he studied medicine to some extent with Dr. John Flood (1850-1918) of that town. He was graduated from the Mantorville High School in 1884, and in July of that year the *Dodge County Republican*[323] observed:

> John McMartin, once one of the Claremont boys, passed his examination creditably at Mantorville, last Friday. He talks of studying medicine with Dr. F. K. [*sic*] Woodard, of Minneapolis, who formerly had a good practice in our village [Claremont.]

Doctor McMartin did go to Minneapolis, where he studied medicine both with Doctor Woodard and at the old Minnesota College Hospital. His professional card appeared in the *Dodge County Republican* for January 1, 1885,[130]

and it was disclosed that he had an office over Hunt's drug store in Dodge Center. At the time he was neither a physician nor licensed to practice medicine in Minnesota.

In fact, in the *Dodge County Republican* of March 19, 1885, the following paragraph was printed among the Mantorville news notes:

> Dr. John McMartin who has been spending his vacation here, bade his many friends good-bye Monday afternoon (and his best girl sometime in the evening), and took the early train Tuesday morning for Minneapolis, where he will study in the office of Dr. Woodward [*sic*] during the coming summer.

Clearly, he was not a Doctor of Medicine by degree at this time. In January of 1885 Doctor McMartin returned to the Minnesota College Hospital, and in September of 1885 he enrolled in the old Louisville Medical College in Kentucky.[131] He was graduated from this college in March of 1886, and out of a class of 100 students he was awarded the gold medal for proficiency in his studies.[132] He returned to Mantorville,[132] but two weeks later he was in practice at Dodge Center. In that town he seems to have obtained a creditable practice, for in May of 1886 he was busy caring for the patients of his friend, Dr. Charles Hill (1824-1914) of Pine Island in Goodhue County, who had gone to Saint Louis to attend the thirty-seventh annual session of the American Medical Association.[125] When Doctor Hill returned Doctor McMartin moved to Kasson, where he remained until May of 1887. In that month he moved to Benson in Swift County,[137] where he was licensed to practice medicine on June 25, 1887, receiving License No. 1479.[40] The ravages of pulmonary tuberculosis soon forced him to cease the practice of medicine, and in January of 1890 he left Benson to go to Saint Paul for medical care. He died in Saint Paul on April 24, 1890, of pulmonary tuberculosis,[321] and the funeral was held in Claremont in Dodge County.[324] He was buried in the old Ashland cemetery.

Dr. Lewis Thomas Francis (1855-1932), the last permanent physician in Wasioja, was born in Spring City, Pennsylvania, on July 6, 1855, the son of Thomas and Esther Francis.[325] In the summer of 1876 the young man went to Wheaton, Illinois, and in the fall he enrolled in Wheaton College in that city. He was graduated from Wheaton College, and next matriculated at the old Bennett College of Eclectic Medicine and Surgery, where he spent the winter of 1881 and 1882. In 1884 he was graduated from the Chicago Homœopathic Medical College, and for about a year thereafter he was associated with Dr. Leonard Pratt of Wheaton, Illinois. He next ventured to College Springs, Iowa, but he was never licensed to practice medicine in that state.[264] The climate there was not to his liking, and in September of 1886 he came to Wasioja in Dodge County.[136] Moreland[67] recalled that in 1886 Doctor Francis delivered a female infant to a woman in Wasioja; this child today (1943) is fifty-six years old. Doctor Francis was licensed to practice medicine in Minnesota in December of 1887, while he was living in Wasioja.[40] Licensure was made by exemption.

In 1890 or 1891 Doctor Francis went to Chicago to take postgraduate work at the Chicago Polyclinic Medical School. The course was finished on February 3, 1891, and he came back to Wasioja. In November of 1892 he was married to Miss Annie E. Cooper of Wasioja.[325] Ten years passed, and in November of 1902 he left Dodge County to settle in Hammond in Olmsted County,[326] where he remained for six years. In about 1908 he removed to Renville in

Renville County, and there he spent the rest of his life. He died on September 26, 1932, of toxemia and exhaustion brought about by carcinoma of the rectum for which he had undergone a palliative operation in Saint Paul in 1931.[327] His widow reported[325] that Doctor Francis had been a general practitioner of medicine who was particularly skilled in the care of children's diseases, and that he had remained a careful and conscientious physician to the end.

Dr. Arthur L. Travis (1861-1927) was born in Syene, Wisconsin, on April 2, 1861, the son of James Travis and Laura Sutherland Travis.[330] According to the registrar[331] of the University of Wisconsin, Doctor Travis was a student in that university in 1877, and in that year was still a native of Syene. He was graduated from Rush Medical College, Chicago, in 1887, and on April 28, 1887, was licensed to practice medicine in Minnesota under Certificate No. 1377.[40] He opened an office above the Central Store in Claremont in April of 1887,[139] but left the town in May of the same year[138] to go to Cottage Grove, Wisconsin, and later to Princeton, in the same state. He settled in Minneapolis in about 1914, opening an office at 1829 East Lake Street. His residence was at 506 Fifteenth Avenue Southeast. By the year 1921 he had an office at 456 Temple Court (Hennepin and Washington Avenues). In 1923 he moved to 304 Besse Building, and at his death was living at 3032 Emerson Avenue South. Doctor Travis was a member of the Volunteer Medical Service Corps during the first World War, and a member also of the Hennepin County Medical Society and the Minnesota State Medical Association. He died in Minneapolis on August 16, 1927.[332]

Dr. Elmer John Tiedemann (1861-) was born in Mauston, Juneau County, Wisconsin, on August 10, 1861,[40] and was graduated from the Rush Medical College at Chicago in 1886, where he doubtless knew Dr. Elias Wells Kellogg (1859-1923), then a part-time student in the same institution. Doctor Tiedemann, as previously mentioned, came to West Concord in Dodge County in May of 1887, where he bought the team of horses that had belonged to Dr. Charles W. Merrill, who had left the town to return to Wisconsin.[140] Doctor Tiedemann was licensed to practice medicine in Minnesota by exemption, at an unspecified date.[40] Moreland[67] remembered Doctor Tiedemann well as a physician in West Concord. Doctor Tiedemann was married in 1888, at his home in Mauston, and in 1890 a son was born in West Concord. In July of that year he moved to La Crosse, Wisconsin,[144] but he later lived in DeSoto, Wisconsin. After some years he moved to Adrian in Nobles County, Minnesota, where he was residing at the time of this report (1943).

(To be continued in the February issue)

References will appear at the conclusion of this article.



E. Mendelssohn Jones, M.D.
President, Minnesota State Medical Association

President's Letter

COUNTY SOCIETIES MUST BE STRONG

Medicine in Minnesota, as in the rest of the country, faces a period of readjustment and change.

Even if there should be no serious threat of government control and controversial alterations in methods of practice, many adjustments will have to be made if the physicians returning from military service are to be re-established smoothly where they are needed when the peace comes.

There are already planning committees of all complexions and persuasions. Each one has its own scheme for remaking the world or the home town and most of them are including medicine in their planning. In the midst of them stand the county and district medical societies as the sole organizations with the knowledge and experience to guide the medical aspects of these plans.

That means that a great responsibility for the future of medicine and the public welfare rests upon the units of organized medicine. Indeed, I believe we are all inclined to overlook the fact that the county medical society is the foundation and most important unit in our great superstructure of state and national bodies. If the county unit is weak, passive or indifferent to the social problems involving the health of the people, then the state and national organization will be weak, too, and impotent in the face of threats against professional standards. The old saying that the chain is as strong as its weakest link is profoundly true, especially in a professional organization which is so intimately involved with the life of every community.

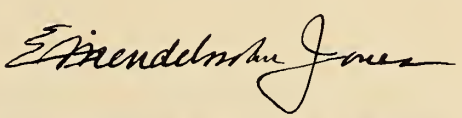
In the year ahead, it is my hope as president, that the Minnesota State Medical Association will do some clear-cut thinking and planning about future needs in Minnesota and lay a firm groundwork for meeting those needs.

To that end, the Council has just authorized appointment of a state-wide postwar planning committee for medicine which will be made up of representatives of every county and district medical society in the state. This committee will need information as to population and facilities which only the county medical society can secure. Its success will depend upon the interest and help of the practicing physicians of the state.

It is true that most physicians left in civilian practice are overburdened these days. But that fact must not be allowed to stand in the way of maintaining strong local organizations and contacts. America cannot successfully be reshaped and restored to the ways of peace from Washington. Adjustments and improvements, if they are to endure, must be made at home and largely out of materials and resources of the home community and state.

For that reason county and district medical societies must continue to be a factor in community life as well as in scientific advancement of their members. No demands made by the war should be allowed to keep those of us who remain at home from active participation in their affairs.

I wish it were possible for me to meet and talk with every member of the association during my term as president of the Minnesota State Medical Association. Failing that, I shall do my best through meetings and correspondence to know the problems and needs of medical men throughout the state and, by helping to meet them, fulfill, in some measure, the high duties of my office.



President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

MATERNITY ASSISTANCE FOR SOLDIERS' WIVES

WHEN it was felt that the wives of servicemen in the lower income brackets would doubtless need financial help for confinement expenses, a federal appropriation of one million dollars was made to be handled by the Children's Bureau through the various State Boards of Health in states concurring in the plan. The demand far exceeded the contemplated need, and an additional three million dollars was allocated, and still later in 1943, eighteen million more. So far some hundred thousand requests for financial aid have been received.

In formulating plans for this new departure in providing federal funds for a certain group in the body politic, the opinion of medical groups was not given much consideration, and in some instances, state boards took action without conferring with state medical associations. This was not the case, however, in Minnesota.

That there is some need for such assistance is undeniable and was officially recognized by the American Medical Association. Our national organization stipulated, however, that the matter of the medical fee should be permitted to be arranged between the soldier's wife and her physician. As the bill was passed, the soldier's wife is allowed a ward hospital bed, and her physician is paid a specified sum ($35.00 in some states, $40.00 in others, and $50.00 in others) for complete obstetrical care including prenatal and postnatal services. The contracting physician is not allowed to make any additional charge, although provision is made for a consultant's fee and a surgeon's fee if such service is needed. As a result, some obstetricians have refused to care for soldiers' wives while a few have donated their services when needed rather than have their fee set by the government. It is this feature of a dictated fee that has raised objections in medical circles through the country. While the allowance is in line with obstetrical fees charged by many general practitioners, the obstetrician is not allowed to make a charge in addition to the specified amount which, as stated, varies in different states.

There are several phases of the subject which are worthy of note. In the first place, any proposal which has to do with aiding mothers and children has at once a popular appeal. During wartime, people cannot do too much for the soldiers. Any opposition on the part of the national or a state medical association to such a plan because of an undesirable feature at once places the medical organizations in an unfavorable light. The powers that be refused to alter the undesirable feature of the bill, and state medical associations have one by one stepped into line though reluctantly in many cases and non-committal in others until forty-five states are now coöperating with the Federal Children's Bureau. Mississippi and Texas, if they have not already done so, will doubtless shortly be added to those in which the plan is operating, leaving North Dakota as the only state to flatly refuse to have the federal government dictate obstetrical fees.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

THE National Foundation for Infantile Paralysis is one of several philanthropies in this country supported entirely by private contributions. These organizations show very plainly that America has a heart in coming to the rescue of the unfortunate with concerted action in a big way.

The National Foundation for Infantile Paralysis will conduct its eleventh campaign January 14 to 31, culminating its drive for funds on the President's birthday, January 30.

Organized on a national basis with state chairman and county committees, the Foundation will attempt to surpass the figure of over five and a half million dollars raised in 1942. Last year Minnesota raised nearly $91,000, the yearly sums subscribed in recent years showing a steady and rapid increase over the $20,000 raised in 1939.

For the information of those not posted, half of the amount raised in each county organized for the collection of funds are withheld for infantile paralysis activities within the county. Such activities include hospital care, transportation of those afflicted, the provision of machines and apparatus and the like. The other half, less the cost of the local campaign, is sent to the national organization. The national organization devotes its funds for research in poliomyelitis control and treatment in established medical centers and for public education. The avowed purpose of the organization is that no patient suffering from the disease or its sequelæ shall lack the best treatment medical science has to offer. Each state organization has its Medical Advisory Committee composed of outstanding surgeons to assist in reaching this goal.

Last year the national organization donated $175,000 in keeping with its policy, to the University of Minnesota Medical School for poliomyelitis research and study which is in addition to some $150,000 previously made available to the University, much of this amount having been devoted to the trial of Sister Kenny's methods from 1940 on.

In Hennepin County the Committee funds have been used for the treatment of poliomyelitis sufferers at Shriner's Hospital, the Kenny Institute in connection with the Minneapolis General Hospital and the Michael Dowling School. In Ramsey County funds are devoted to patients in the Gillette, Children's and Ancker hospitals and to assist pupils in the Lindsey school.

Last month the Foundation announced a grant of $150,000 for the establishment of the first center for the scientific study and development of physical medicine in the Graduate School of Medicine of the University of Pennsylvania. Its purpose will be to prove or disprove physiotherapy methods and to provide a center for the training of teachers in this branch of medicine. The Foundation in the past six years has already spent $350,000 in the training of physiotherapy technicians in techniques so useful in the treatment of poliomyelitis and has granted an additional $364,000 to laboratories and universities for the investigation of problems in physiology and medicine related to physiotherapy. Both phases will now be studied in this new center in Philadelphia.

Last year some 55,000 volunteer workers gave their time and effort to the campaign with the result that expenses were kept down to 2.6 per cent of the sum collected nationally and in Minnesota to .82 of 1 per cent. It is planned this year to organize a National Women's Division with state chairmen and women's committees in each county if possible.

Until such time as research shows the way to prevent poliomyelitis there will be a need for funds to combat this terrifying disease. Last year the epidemic in our county as a whole was the worst since 1931. This will doubtless further stimulate those taking part this year in the nation-wide fight against this stubborn enemy.

A MEDICAL SERVICE BUREAU IN WASHINGTON

AT the June, 1943, meeting of the A.M.A. House of Delegates, some six state society delegations proposed resolutions that the A.M.A. establish an office in Washington, which would make the medical viewpoint on problems concerning medicine available to governmental agencies and which would keep the medical profession informed on matters affecting medical care in general. Minnesota delegates took an active part in the proposal. The result was the formation of the Council on Medical Service and Public Relations, but the whole point of the proposal seems to have been lost by the provision that the establishment of the Washington office be left to the discretion of the newly formed Council. The Council has so far not established a Washington office. It should be stated that the Council has had difficulty in finding a suitable full-time secretary, and it required several months of search before the services of Dr. G. L. Kelly, Dean of the Medical School of the University of Georgia, were obtained, effective January 1, 1944.

There has been a growing feeling on the part of many physicians throughout the country that the wishes of the profession in regard to the establishment of a Washington office have been ignored.

It is interesting to learn that on December 11, 1943, representatives of the medical associations of Arizona, California, Colorado, Idaho, and Utah, met at Salt Lake City and unanimously voted to form an organization to be known temporarily as the Western States Public Health

League for the avowed purpose of maintaining a medical service bureau in Washington, the cost to be met by a per capita assessment of members of some eleven western medical associations, some five additional state associations having signified their approval without being able to send representatives to the meeting. It is expected that final approval and appropriation of funds will be given by these eleven western medical associations by the end of January, 1944, so the Washington office can be established.

At this Salt Lake City meeting, a report was presented by Mr. Ben H. Read, Executive Secretary of the Public Health League of California, who was sent to Washington by the California Medical Association to obtain information on the status of the medical profession in governmental circles. Evidently his report showed an outstanding need for such an office.

Other states are invited to join this Western States Public Health League in what promises to be a nation-wide movement. The formation of this league indicates the demand for a Washington office. It should represent all the states and not a sectional group, and it is to be hoped this will be the ultimate outcome.

THE MEDICAL GUILD THREATENED

THE Wagner-Murray Bill, as every physician who has read the numerous articles on the subject which have appeared in the *AMA Journal* or the several editorials which have appeared in Minnesota Medicine knows, and as all congressmen should know, places all control of medicine in the hands of the Surgeon General of the United States Public Health Service under bureaucratic control in Washington. Every physician must be convinced that such an undertaking will result of necessity in deterioration in the high standard attained by American Medicine. Financial support from Washington means control in Washington and politics will play an important part in such matters as the designation of specialists, the establishing of new hospitals and medical education.

How much the man on the street knows or cares about the Wagner-Murray Bill is difficult to evaluate. We recently received a communication from a manufacturer attempting to interest us in the provisions of the law relating to the renegotiating of war contracts as it now stands. Knowing very little about the subject we immediately suspected that the manufacturer had his axe to grind and were not particularly interested. We suspect this attitude is much the same as that of the layman in regard to this medical bill. And we also suspect that any effort on the part of the medical profession to influence the laity or Congress will be met with the same suspicion that the profession has its axe to grind.

There is one line of approach however which each physician can use in combatting this nefarious bill. Each physician sees several patients each day. He can and should take the time to inform them about the danger threatening medical practice. He could well explain the progress made in the science and practice of American Medicine over a long period of years through the efforts of the profession itself. How the profession has been outstanding since the time of Hippocrates in its education, often without compensation, of succeeding generations of doctors, how it has donated its services to those who could not afford a doctor's fee, how through the various Councils of the AMA it has improved medical education, raised the standards of hospitals, approved valuable medical remedies and fought quackery, established the various Boards for qualified specialists, fostered medical meetings, published medical journals and conducted other activities too numerous to mention—all for the betterment of American medicine. The substitution of political and bureaucratic control of medicine will counteract all this.

Public opinion is a powerful factor and it is important that the public should know what the Wagner-Murray Bill will do to American Medicine.

Tuberculosis has been present for so long and people are so accustomed to it, that the interest of the public and of many public health workers is in danger of being sidetracked to more glamorous and exciting problems. This is a serious deterrent to accomplishment in this field. Further, the decline in tuberculosis, both in morbidity and mortality, in the last 40 years, may lead some to think that the problem is one of the past. Let there be no mistake in this direction. Tuberculosis continues to be a real problem. If, instead of comparing the tuberculosis rate of today with what it was 50 years ago, one will compare the tuberculosis prevalence and mortality of today with today's prevalence and mortality of other diseases, the present seriousness of the tuberculosis problem can be appreciated. In the most productive period of life, tuberculosis continues to cause more deaths than any other one disease. Ed., Am. J. Public Health, July, 1943.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

INSURANCE MEN SEEK AID

It is interesting to see how the threat of government expansion in social security has made allies of organizations which formerly had little in common.

Insurance companies whose contacts with medicine have been limited largely, heretofore, to compensation matters and the physical examination of subscribers, are now seeking medical support for a common front against the extension of government insurance, including medical and hospital insurance, in the United States.

Mr. E. H. O'Connor of Chicago who spoke to groups of doctors, dentists, pharmacists and hospital men in the Twin Cities in December is spokesman and executive director for an organization of insurance companies established in 1917, some years before medicine felt itself seriously threatened by government control. The organization is called the Insurance Economics Society of America and its policy, as expressed by Mr. O'Connor is, at this stage, to seek and cement coöperation of all groups and professions especially effected by proposals in the Wagner-Murray-Dingell bill and in the recommendations of the National Resources Planning Board.

May Be Campaign Issue

This is the spade work of opposition. The actual battle will not be carried to the public until the issue is joined. It is his belief that Congress will not act on the Wagner bill at this session but he feels sure that expanding social security will become a campaign issue in the election. When it does become such an issue it will be time, the insurance companies believe, to go direct to their millions of subscribers.

Meantime much of what he said at the Twin City meetings was familiar to medical men who have observed with growing concern the general tendency toward regimentation and a stifling bureaucracy. In general, Mr. O'Connor's text was that the voluntary efforts of the individual to provide his own protections including his own medical service, should be encouraged rather than destroyed; that the economic and social conditions in America are not suitable for the substandard social protections worked out for Europeans. With that text physicians will heartily agree.

The extent to which Americans have already purchased their own protection against accident and illness were impressive as shown by Mr. O'Connor.

Millions Already Protected

"Between 1919 and 1942," he said, "the net premiums written in the United States by health and accident insurance companies increased from 60 million dollars to 359 million dollars. It is estimated that the number of persons in the United States protected under some form of health and accident insurance has grown from eight millions in 1934 to over 30 millions in 1942. The figures for 1943 will show a continuance of these increases.

"It should be pointed out," he said further, "that the rate of growth in the number of persons insured exceeds the rate of growth in premium volume. This is explained partly by the rapid expansion of group accident and sickness insurance and of hospitalization insurance and partly by the fact that many new policies have been devised and marketed, offering coverage in the lower limits of indemnity."

Privately, Mr. O'Connor told interested listeners after the meeting that the insurance companies can and probably will, in the future offer much more extensive coverage on an indemnity basis for medical care than most of them offer now. The obstacle in the way lies chiefly in the va-

rious state laws many of which would have to be altered before the large insurance companies could expand in that field. If the government steps in of course all other efforts in that field will be stifled.

Non-profit Plans Approved

He was very far from expressing any opposition to either the Blue Cross hospitalization plans or to any non-profit voluntary medical insurance plans sponsored either coöperatively or by medical societies in various parts of the country. The great trouble with the latter has been, in his opinion, that as soon as enabling legislation is secured to permit their operation on a non-profit basis, in any locality, a half a dozen or more organizations immediately spring into being making success difficult, if not impossible, for any. Such has been the case in New York and it should be guarded against, if possible where similar plans are contemplated elsewhere.

Insurance Principle Accepted

In any case, the principle of insuring against loss from unpredictable and involuntary expenditures such as those caused by death, accident, fire, hospitalization and illness is accepted as sound by most Americans.

The question is not whether there should be insurance protection against these things but whether the insurance protection which the individual can purchase for himself and enjoy as the fruit of his own labor is not better for Americans than the insufficient, sub-standard protection which is all that can be guaranteed by the government in spite of terrific costs in taxes and in abbrogated civil liberties.

There is no doubt of the answer of medical men and of all liberty loving Americans if the question is put to them fairly.

So far America has taken only a few preliminary steps in the direction of complete legislative cradle-to-the-grave protections for its citizens. The legislation is only a few years old but its operations have already shown up gaps and errors. These gaps should be filled and the errors rectified because this legislation is on the statute books to stay

Security by Handout

But here our program of security by government handout should halt. Real protection for Americans still means the security they can earn for themselves by jobs and by equal opportunity for education and advancement.

Security by handout is for nations for whom the horizons of new opportunity have closed down permanently for the majority. If we are not ready to admit that such is the case in America then we must place our emphasis for the future, not upon paternalism, but upon the preservation of freedom and opportunity. When opportunity languishes and employment is consistently precarious, when great numbers of men go hungry and are impoverished and ill through no fault of their own, then it will be time to turn to the government, remembering always that the government does not give without taking. In this instance it will take not only the liberties but the initiative and energies of the people.

An illuminating footnote to Mr. O'Connor's remarks was his observation, also, that the figures upon which cost estimates of the Wagner-Murray-Dingell legislation were based came from prewar German statistics. Obviously such figures were not available from any previous experience in the United States; but it was nevertheless startling to hear that congressmen of the United States should be borrowing for the people of the United States from the most pernicious system in all prewar Europe.

Last Resort

The point for congressmen and all others who dream of a millenium to remember is this: government sickness insurance is a measure of last resort. It is suitable only when the great majority of people are getting very poor medical service or none at all and the social economy is such that it is impossible for them to provide anything better for themselves.

Our present system of medicine in America is admittedly not perfect. It needs improvement at many points. But it is better than anything available anywhere else in the world and the health of the people is the best of any comparable group in the world.

Furthermore, the vast majority of the people are able to provide it for themselves and theirs is the money that keeps it going. So long as that is the case, it makes little difference whether they spread the costs by insurance or develop some other methods of easing payments.

PREPAYMENT EXPERIMENTS IN MINNESOTA

The only prepayment plans for medical service now in operation under medical society sponsorship in Minnesota are the experiments in cooperation with the Farm Security Administration for FSA clients in Ottertail, Wilkin, Morrison and Mille Lacs counties

From one point of view, only, have these experiments been satisfactory—that of providing the doctors with valuable experience in a new form of service.

Perhaps as a last minute bid for self-perpetuation, the Farm Security Administration appealed recently to the Council of the Minnesota State Medical Association for permission and approval to extend the plan to low income farmers (not FSA clients) in Wadena county.

Few "Low Income" Farmers

In consideration of the fact that there are very few low income formers in Wadena or anywhere else at the present time, and that such efforts by a federal agency would encroach upon and duplicate services already provided under the state law by the Division of Social Welfare, the Council refused its approval.

In the course of discussions on the matter, the following interesting facts came to light.

About 60 per cent of eligible FSA clients are subscribers to the plan in Ottertail county. In Morrison county the percentage is 44 and in Mille Lacs county it is only about 42. Even the Ottertail percentage is too low for sound financing and FSA administrators have fallen down on their own promises of at least 75 per cent participation on the part of the client families.

Premiums during the first two years were only $22 and too low for good service. They have been raised by the FSA to $30 this year.

Within the last month, Congress failed again to appropriate money for the FSA. Nevertheless, sufficient funds are said to be on hand to operate for a full year.

Willing to Continue

In general, the doctors have received about 65 per cent of normal fees from their FSA practice and more than 66 per cent from the Division of Social Welfare for care of relief clients and others provided for under Minnesota relief laws.

They are willing, however, to continue in the four counties approved by the Council for the experiment for the sake of learning more about prepayment plans for medical service.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary

ROCHESTER RESIDENT SENTENCED FOR FORGING NARCOTIC PRESCRIPTIONS

Re United States of America vs. Lester Stellmacher

On November 20, 1943, Lester Stellmacher, thirty-nine years of age, Rochester, Minnesota, was sentenced to a term of 5 years in the United States District Court at St. Paul, the sentence being suspended and the defendant placed on probation by Judge Robert C. Bell on condition that Stellmacher report on or before December 1, 1943, to the Federal Hospital for drug addicts at Lexington, Kentucky.

Stellmacher had forged several narcotic prescriptions on physicians at Rochester and other towns in that vicinity. He has a previous conviction for a similar offense in July, 1939, when he was sentenced to 3 years in the United States District Court at Winona. The sentence, at that time, was suspended and the defendant placed on probation.

Stellmacher operated a tourist camp at Rochester, Minnesota, and the facts indicate that he has been addicted to the use of narcotic drugs since 1934. He attributes his addiction to the use of narcotic drugs prescribed for severe attacks of asthma.

SIXTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The sixth Annual Congress on Industrial Health will take place on February 15 and 16, 1944, at the Palmer House in Chicago. Those who expect to attend are urged to make travel and hotel reservations at their earliest convenience. These sessions follow directly after those of the Annual Congress on Medical Education and Licensure. The deans of medical schools and others interested in medical education may find it possible to attend the sessions on industrial health; a special effort will be made to induce them to do so. Official representatives of medical societies and allied organizations can attend both congresses this year without extra travel. One of the great obstacles to the growth of industrial medical service has been the slow development of public interest in the health and economic benefits which the physician can bring to the industrial organization. The Congress on Industrial Health, therefore, will attempt to attract greater interest from management and labor. Prominent representatives of these groups will be asked to participate. Interest in the physical welfare of the working population must be maintained even after the stimulus of wartime production is over. This element in postwar planning must be encouraged. The sessions of the sixth Annual Congress on Industrial Health will attempt to bring this relationship into proper focus. The congress will also emphasize the importance of physical restoration, retraining and reëmployment of the disabled, an issue which is certain to be a source of medical preoccupation for some years to come. Industrial health is gradually assuming greater and greater importance as an avenue for the distribution of medical service. Every physician and medical organization should recognize the trend so that the movement may be guided along dependable scientific and educational lines.—*JAMA*, December 25, 1943.

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Havel, Lt. T. E.....Blue Earth
Hawkinson, Major R. P....Minneapolis
†Hays, A. T.....Minneapolis

*Died in Service
**Reported missing in action
†Rank unknown

Head, Major D. P.....Minneapolis
Hebbel, Major Robert.....Minneapolis
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Johnson, Lt. Comdr. H. A.....
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Leighton, Major Robert.....Evansville

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Lindgren, Major R. C.....Minneapolis
Lippman, Major E. S.....Minneapolis
Lipschultz, Major Oscar...Minneapolis
Litman, Capt. A. B.....Minneapolis
Little, Lt. A. G., Jr.....Rochester
Lovelace, Lt. Col. W. R.....Rochester
Lovelady, Major S. B.....Rochester
Lovering, Capt. Joseph.....Rochester
Lovshin, Lt. L. L.....Wausau, Wis.
Lueck, Lt. (jg) A. G.....Rochester
Lufkin, Comdr. N. H.....Minneapolis
Lundblad, Capt. R. A.....Minneapolis
Lundblad, Capt. S. W.....Minneapolis
Lundquist, Capt. C. W.....Winona
Lynch, Lt. R. C.....Rochester
Lysne, Capt. Myron.....Minneapolis

Macey, Lt. H. B.....Rochester
Mack, Capt. J. J.....Chicago, Ill.
MacKay, Lt. H. J.....Seattle, Wash.
MacKinnon, Lt. Comdr. D. C.....
.....Minneapolis
Macklin, Lt. Comdr. W. E., Jr....
.....Litchfield
MacLean, Lt. (jg) A. R.....Rochester
MacMillan, Lt. D. G.....Triumph
MacRae, Lt. Col. G. C.....Duluth
Madland, Capt. R. S.....Fairfax
Magath, Capt. T. B.....Rochester
Mark, Lt. Col. Hilbert.....Minneapolis
Marks, Capt. R. W.....St. Paul
Marsh, Lt. O. M.....Litchfield
Marvin, Lt. (jg) C. P.....Rochester
Mason, Lt. J. A.....International Falls
Mattison, Lt. R. E.....Minneapolis
Mattson, Lt. A. D.....Atwater
Mattson, Lt. Comdr. C. H.....St. Paul
Mayne, Comdr. R. M.....Duluth
Mayo, Lt. Col. C. W.....Rochester
Maytum, Lt. Col. C. K.....Rochester
McCaffrey, Lt. F. J.....Minneapolis
†McCallig, J. J.....Rochester
McCarthy, Capt. Donald....Minneapolis
McCrimmon, Comdr. H. P.....
.....Minneapolis
†McEacheran, C. G.....Rochester
†McElligott, E. W.....Breckenridge
McEnaney, Capt. C. T.....Owatonna
McKenzie, Lt. Comdr. C. H.....
.....Minneapolis
Mead, Lt. Comdr. C. H.....Duluth
Mears, Lt. B. J.....St. Paul
Medelman, Major J. P.....St. Paul
Merrill, Lt. Robert.....Morris
Messler, Lt. J. D.....Rochester
Meyer, Capt. J. O.....Grand Rapids
Meyer, Capt. W. M.....Winona
Michel, Capt. H. H.....Minneapolis
Miller, Lt. Harold E.....Minneapolis
Miller, Lt. Comdr. Hugo E.....
.....Minneapolis
Minge, Lt. R. K.....Clarkfield
Minckler, Lt. J. E.....Virginia
Moir, Major W. W.....Stillwater
Mollers, Capt. T. P.....Mountain Iron
Monserud, Lt. N. O.....Cloquet
Monson, Lt. E. M.....Minneapolis
†Monson, L. J.....Canby
Moos, Lt. D. J.....Minneapolis
Moren, Lt. L. A.....St. Paul
Mouritsen, Lt. G. J.....Fergus Falls
Mousel, Major L. H.....Rochester
Muir, Capt. W. F.....Graceville
Mulligan, Lt. Col. A. M.....Brainerd
Murphy, Lt. E. P.....Minneapolis
Murphy, Lt. J. E.....Marshall
Murray, Capt. R. A.....Aitkin
Musgrove, Capt. J. E.....Rochester
Musty, Capt. N. J.....Minneapolis

Naegeli, Capt. A. E.....St. Paul
Naslund, Lt. Comdr. A. W.....
.....Minneapolis
†Nauth, B. S.....Winona
Neale, Lt. R. M.....Rochester
†Neel, H. B.....Albert Lea
Nelson, Capt. K. L.....Montgomery
Nelson, Capt. L. M.....Minneapolis
Nelson, Lt. L. S.....Hibbing
Nelson, Lt. M. C.....Minneapolis
Nelson, Lt. O. L. N.....Minneapolis
Nelson, Major R. L.....Duluth
Nelson, Major W. I.....Minneapolis
†Nesheim, M. O.....Emmons

Newell, Lt. F. W.....St. Paul
Nickel, Capt. W. R.....Rochester
†Nielsen, A. M.....Northfield
Noble, Capt. J. L.....St. Paul
Noonan, Lt. Col. W. J.....Minneapolis
Nuebel, Lt. C. J.....St. Paul

O'Brien, Capt. W. M.....St. Paul
Ogden, Lt. Comdr. Warner....St. Paul
Olds, Capt. G. H.....Waseca
O'Leary, Lt. J. H.....Staples
†Olsen, E. G.....Minneapolis
†Olson, C. J.....Belle Plaine
Olson, Lt. G. E.....West Concord
Olson, Lt. L. M.....Chisago City
Olson, Lt. S. W.....Rochester
Owens, Lt. W. A.....Montevideo

Paine, Major J. R.....Minneapolis
Palen, Capt. B. J.....Minneapolis
Palmerton, Lt. E. S.....Albert Lea
Pankratz, Lt. P. J.....Mountain Lake
Parson, Lt. E. I.....Duluth
Patch, Capt. O. B.....Duluth
†Patterson, H. D.....Anoka
Patterson, Lt. (jg) S. A.....Duluth
Pattison, Lt. D. H.....Rochester
Paulson, Capt. E. C.....Elbow Lake
Paulson, Capt. D. L.....Rochester
Pedersen,, Lt. R. C.....Duluth
Pender, Lt. (jg) J. W.....Rochester
Pennington, Capt. R. E.....Rochester
Perlman, Lt. Col. E. C.....Minneapolis
Perry, Lt. T. T.....Rochester
Petersen, Capt. R. T.....Minneapolis
Peterson, Lt. Comdr. D. B....St. Paul
Peterson, Lt. Comdr. H. W.....
.....Minneapolis
Peterson, Lt. J. H.....Duluth
Peterson, Lt. W. G.....Rochester
Pewters, Lt. J. T.....Minneapolis
Phalen, Capt. G. S.....Rochester
Plimpton, Lt. N. C., Jr.....Rochester
Pohl, Lt. Comdr. J. F.....Minneapolis
Pollard, Major D. W.....Minneapolis
Ponterio, Lt. J. E.....Shakopee
Potek, Lt. David....International Falls
Preston, Lt. F. W.....Rochester
Priest, Capt. R. E.....Minneapolis
Priestley, Lt. Col. J. T.....Rochester
Prins, Lt. L. R.....Albert Lea
Proeschel, Lt. R. K.....Willmar

Quello, Capt. R. O. B.....Minneapolis

Ramsay, Flight Lt. R. M.....St. Paul
Rasmussen, Lt. W. C.....Rochester
Rea, Major C. E.....St. Paul
Reif, Capt. H. J.....St. Paul
Rewbridge, Major A. G.....Minneapolis
Rice, Lt. H. G.....Moorhead
Rice, Lt. Comdr. H. R.....Roseau
Richardson, Lt. Col. F. S...Minneapolis
Richardson, Lt. R. J.....Rushford
Rick, Lt. P. F. W.....St. Paul
Rinkey, Lt. Eugene .....Redwood Falls
Ritchie, Major W. P.....St. Paul
Rizer, Lt. D. K.....Minneapolis
Roberts, Lt. L. J.....Minneapolis
Roberts, Lt. S. W.....Minneapolis
†Roemer, H. J.....Winona
Rogers, Lt. J. D.....Rochester
Rogne, Capt. W. G.....Spring Grove
Rosenfield, Major A. B.....Hibbing
Rosenholtz, Lt. Comdr. B. I....St. Paul
Rosenthal, Capt. F. H...Grand Meadow
Ross, Capt. A. J.....Minneapolis
Rossen, Lt. R. X.....Hastings
Roth, Lt. F. D.....Lewiston
Rudie, Lt. Comdr. P. S.....Duluth
Ruggles, Capt. G. M.....Forest Lake
Rulison, Lt. F. T., Jr.....Rochester
Rumpf, Lt. Col. C. W.....Faribault
Russeth, Lt. A. N.....Minneapolis
Ryan, Major J. M.....St. Paul

Sach-Rowitz, Lt. Col. Alvan.....
.....Moose Lake
Sadler, Lt. Comdr. W. P., Jr....
.....Minneapolis
St. Cyr, Capt. K. J.....Osseo
Saliterman, Capt. B. I.....Minneapolis
Samson, Lt. Comdr. E. R....Stillwater
Samuelson, Major L. G.....Mankato
Sandt, Capt. K. E.....Minneapolis
Sather, Lt. G. A.....Fosston
Sather, Lt. R. N.....McIntosh
Sather, Major R. O.....Crookston

Sayre, Capt. G. P. ..... Rochester
Scales, Lt. J. R. ..... Rochester
Schamher, Lt. W. F. ... Parkers Prairie
Schleinitz, Capt. F. B. ..... Battle Lake
Schlicke, Lt. C. P. ..... Rochester
Schmidt, Lt. Col. G. F. ..... Minneapolis
Schmidt, Major H. W. ..... Rochester
Schmidt, Capt. W. R. ..... Worthington
Schmitt, Lt. G. F., Jr. ..... Rochester
Schneider, Lt. H. H. .. Kansas City, Mo.
Schroeckenstein, Lt. H. F. ..... St. Paul
Schulze, Lt. W. M. ..... Swanville
Schweiger, Lt. T. R. ..... Hibbing
Schwyzer, Capt. H. C. ..... St. Paul
Sealy, Capt. W. B. ..... Rochester
Seashore, Capt. R. T. ..... Duluth
Seljeskog, Major S. R. ..... Minneapolis
†Sellers, G. K. ..... Dassel
Sharpe, Capt. W. S. ..... Minneapolis
Shaw, Lt. H. A. ..... Lake Park
Shelden, Lt. J. T. ..... Rochester
Shephard, Lt. V. D. ..... Rochester
†Shick, R. M. ..... Rochester
Shima, Lt. G. J. ..... Sleepy Eye
Shimonek, Lt. Comdr. S. W. ... St. Paul
†Sidell, C. M. ..... Rochester
Simons, Lt. Col. L. T. ..... St. Paul
Simons, Lt. S. J. ..... Akeley
Simonson, Lt. D. B. ..... Minneapolis
Simonton, Major K. M. ..... Rochester
Sinykin, Capt. M. B. ..... Minneapolis
Sjostrom, Lt. L. E. ..... Storden
Sloan, Capt. Julius ..... Minneapolis
Smith, Lt. F. H. ..... Rochester
Smith, Lt. G. G. ..... Fulda
Smith, Major L. A. ..... Balaton
†Smith, L. A. ..... Rochester
Snell, Comdr. A. M. ..... Rochester
Snyker, Capt. O. E. ..... Ely
Sonnesyn, Capt. N. N. ..... Le Sueur
Sorem, Lt. (jg) M. B. ..... St. Paul
Spano, Capt. J. P. ..... Minneapolis
Sperling, Major Lou's ..... Minneapolis
Spittler, Capt. R. O. ... New Richland
Stafford, Capt. C. E. ..... Baudette
Stebbins, Capt. T. L. ..... Minneapolis
Steinberg, Lt. Comdr. C. L. ... St. Paul
Stemsrud, Capt. H. L. ..... Alexandria
Stewart, Lt. D. E. ..... Grand Rapids
Stewart, Lt. Col. N. E. .....
..... Ft. Leonard Wood, Mo.

Stolpestad, Lt. H. L. ..... St. Paul
Stout, Lt. H. A. ..... Rochester
Stover, Lt. Lee ..... Rochester
Stransky, Lt. T. W. ..... Owatonna
Stratte, Major A. K. ..... Pine City
Straus, Capt. M. L. ..... St. Paul
Street, Major Bernard ..... St. Cloud
†Strom, G. W. ..... Rochester
Stromgren, Lt. D. T. ..... Minneapolis
Sullivan, Major R. R. ..... Minneapolis
Svien, Lt. H. J. ..... Rochester
Swanson, Major P. E. ..... Virginia
Swedenburg, Capt. P. A. ..... Swanville
Sweetser, Comdr. H. B., Jr. .....
..... Minneapolis
Swenson, Lt. Comdr. A. O. ..... Duluth
Sybilrud, Lt. Comdr. H. W. .. Bricelyn

Taylor, Lt. E. S. ..... Worthington
Taylor, Lt. (jg) J. C. ..... Rochester
Teisberg, Lt. J. E. ..... Middle River
Thayer, Lt. E. A. ..... Truman
Thompson, Lt. C. A. ..... Hendricks
Thompson,, Major F. A. ..... St. Paul
Thompson, Lt. Comdr. G. J. .. Rochester
Thysell, Lt. D. M. ..... Minneapolis
Tihbetts, Lt. Comdr. M. H. ..... Duluth
Tifft, Lt. C. R. ..... St. Paul
Tillisch, Capt. J. H. ..... Rochester
Troost, Capt. H. B. ..... Mankato
Trow, Capt. J. E. ..... Minneapolis
Trytten, Capt. E. G. ..... Middle River
Tudor, Capt. R. B. ..... Hibbing
Tuohy, Lt. E. B. ..... Rochester
Tweedy, Lt. J. A. ..... Rochester
Twyman, Lt. R. A. ..... Rochester

Underdahl, Lt. L. O. ..... Rochester
Urberg, Major S. E. ..... Duluth

Vail, Lt. Comdr. J. B. ..... Henning
Van Demark, Lt. R. E. ..... Rochester
Vandersluis, Lt. C. W. ..... Bemidji
Van Valkenberg, Lt. J. D. ... Floodwood
Vaughn, Capt. L. D. ..... Rochester
†Virnig, M. P. ..... Wells

Wahlberg, Capt. E. W. ..... Sleepy Eye
Wallace, Lt. G. T. ..... Rochester
Walsh, Capt. F. M. ..... St. Paul
Walsh, Major M. N. ..... Rochester
Walsh, Capt. W. T. ..... Minneapolis
Walter, Lt. C. W. ..... St. Paul
Walters, Capt. Waltman ..... Rochester
Warren, Major C. A. ..... St. Paul
Wasson, Lt. L. F. ..... Alexandria
Watkins, Comdr. C. H. ..... Rochester
Watson, Lt. S. W. ..... Royalton
Watson, Major W. J. ..... Holdingford
Weber, Comdr. H. M. ..... Rochester
Wehster, Major L. J. ..... Battle Lake
Weis, Lt. Comdr. B. A. ..... St. Paul
Weisman, Major S. A. ..... Minneapolis
Weismann, Lt. R. E. ..... Rochester
Wellman, Lt. T. G. ..... Lake City
Wells, Lt. G. R. ..... Rochester
Wells, Lt. W. B. ..... Jackson
Wenzel, Lt. G. P. ..... St. Paul
Wheeler, Lt. Comdr. D. W. ..... Duluth
Whitacre, Lt. J. C. ..... St. Paul
†White, A. A. ..... Minneapolis
Whitehouse, Lt. F. R. ..... Rochester
Whitney, Lt. R. A. ..... Cambridge
Widen, Lt. Comdr. W. F. .. Minneapolis
Wiechman, Major F. H. .... Montgomery
Wildebush, Comdr. F. F. .... Minneapolis
Wilder, Capt. R. L. ..... Minneapolis
†Williams, J. A. ..... Hibbing
Williamson, Lt. Col. G. A. ..... St. Paul
Wilmot, Lt. C. A. ..... Litchfield
†Wilson, G. T. ..... Rochester
Wilson, Capt. I. H. ..... Worthington
Wilson, Lt. Comdr. J. A. ..... St. Paul
Wilson, Lt. W. H. ..... Rochester
Wingquist, Lt. C. G. ..... Crosby
Wipperman, Lt. F. F. ..... Minneapolis
Wolfe, Lt. Col. H. H. ..... St. Paul
Wolkoff, Capt. H. J. ..... St. Paul
Wolstan, Lt. S. D. ..... Minneota
Wood, Lt. W. W., Jr. ..... Rochester
Wulf, Lt. R. F. ..... Rochester

Yeager, Capt. C. L. ..... Rochester
Younger, Capt. L. I. ..... Winona

Zachman, Capt. L. L. ..... St. Paul
Zemke, Capt. E. E. ..... Fairmont

†Rank unknown

ARMY HOSPITAL TRAIN

Forerunner of others to come, a ten-car hospital train for the United States Army Medical Corps is now in use for training purposes as well as in combat areas overseas.

The ten-car, all-steel train was built at a cost of $135,000 by the Pullman Standard Company, and is illuminated throughout with fluorescent lamps in a variety of fixtures all specially-designed and engineered by Sylvania Electric Products, Inc., under special dispensation of the War Production Board.

Staffed by five medical officers, seven nurses and thirty-three enlisted men, the train is the last word in modern equipment and design for the transport of casualties. Narrower and shorter than standard-sized American railroad cars, the cars of the hospital train were especially constructed to roll on the sharp curves, and steep inclines of foreign tracks. Four cars are for personnel, 220-volt generators and steam boilers for heating and ventilating, kitchen-dining and pharmaceutical facilities.

Six of the cars are ward cars, each providing berths for sixteen bed patients, or more "sit-up" patients with the double-decker berths folded down. In the center of each ward car is an emergency operating area, a cleared space free of berths. Stretchers may be carried into the train through double-size doors in the center of the car, placed on portable standards, and used as an operating table without transfer of the casualty.

Minnesota Academy of Medicine

Meeting of November 10, 1943

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minnesota Club in Saint Paul, on Wednesday evening, November 10, 1943. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the President, Dr. H. B. Zimmermann.

There were forty-six members and one guest present.

Minutes of the October meeting were read and approved.

There was no business to come before the Academy so the scientific program followed immediately.

CARCINOMA OF THE RECTUM

With Report of 100 Consecutive Operative Cases

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Certain definite things are known about the early development of cancer of the rectum. One is that the condition not infrequently develops in previously benign adenomas. It is also known that cancer will develop in practically 100 per cent of cases of multiple polyposis unless the patient dies of some intercurrent disease. Cancer may develop in untreated rectal fistulæ and other chronic inflammatory processes. Some tumors are malignant in character as soon as they are large enough to be visible. There may be a very short period of premalignancy but, if so, the picture changes very early in their development. I have removed two tumors under 20 millimeters in diameter, and but slightly raised above the surface of the surrounding rectal mucosa, which microscopic examination proved to be definite adenocarcinomas. Cancers of this type and size are of course symptomless, and their discovery occurs only by chance during routine proctoscopic examination.

Symptoms of cancer of the rectum should be divided into two distinct groups. First are the early symptoms, which occur while the condition is still operable and the outlook for permanent cure is good. The only early symptoms of early cancer, are the passage of blood or blood-tinged mucus. The amount is often small and unfortunately these early symptoms are usually ignored or attributed to some other cause. As a result most patients come to the surgeon with a well-developed cancer, and only too often with one so far advanced, that any treatment other than palliative is impossible. Until patients and physicians realize the passage of even small amounts of blood or blood-tinged mucus calls for immediate proctoscopic examination, the early discovery of carcinoma will not increase. Unfortunately the type of bleeding is not characteristic. It is just like bleeding from most other causes. The amount is usually small and only noticed with defecation. The manner in which the mucus is passed is sometimes characteristic. In this case the mucus is expelled almost as soon as the patient arises and is accompanied by rather explosive flatus, and little or no stool. On cleansing the anal region the patient notes the presence of a small amount of slippery mucoid material, which may or may not be blood-tinged. In rare instances pain may be an early symptom, but this occurs only when the site of the tumor is at the rectal juncture and the anoderm is involved.

The second group of symptoms indicate well-developed or inoperable carcinomas. These are marked bleeding, urgency, and tenesmus with frequent passage of considerable amounts of mucus. Still later, low-back pain, anemia, loss of weight and strength occur. Unfortunately, these are the symptoms which are most often stressed. Only too often the physician waits patiently for them to appear instead of instantly making a proctoscopic examination upon the first complaint of any rectal disturbance. Since bleeding and/or perhaps a little mucus are the earliest symptoms of rectal carcinoma, we have made an effort to determine just how early in the development of the tumor they are likely to occur. The time depends somewhat upon the physical type of carcinoma, of which there two broad divisions. The first is the polypoid lesion, which may have either a long narrow strap-like pedicle or a short thick one. This tumor even no more than a centimeter in diameter will almost invariably cause considerable bleeding. The blood is bright red, and if not sufficient in amount to stain the water in the toilet, will at least be easily noticed on the stool or on the toilet tissue.

The second type of lesion is the one I have often referred to as the button carcinoma. It appears as a flat button-like elevation in the rectal mucosa. When only a few millimeters in diameter, this area appears as a thickening or elevation of the normal mucosa, but as the tumor increases in size, the center-portion appears indurated and is deep dusky red in color. By the time the tumor is 1.25 cm. in diameter, the dusky center-portion is necrosed and ulcerated. The tumor then presents the appearance of a button-like elevation with a necrotic or ulcerated center, surrounded by a ring of dusky red indurated mucosa, and this in turn surrounded by what appears to be a narrow band of normal, but elevated rectal mucosa. In these tumors there is no blood or mucus until central necrosis occurs. The amount of blood or mucus is usually small, though in exceptional instances a blood vessel may be eroded and fairly large amounts of blood be present. In the

beginning there is usually only a streak on the side of the stool or on the toilet tissue, and the amount is so small it passes unnoticed. While the bleeding usually occurs by the time the tumor is 1.25 cm. in diameter, the growth is likely to be 2 or more centimeters in diameter before bleeding is sufficient to be noted by the patient. While pedunculated lesions are often benign, the flat lesions are usually malignant and should be assumed so until biopsy and microscopic examination prove otherwise.

Discovered in this stage of development, most of these tumors are curable. Unfortunately at the present time but a small proportion are discovered this early. Buirge, in reporting a series of 135 cases at the University of Minnesota, found in 75 per cent the growth entirely surrounded the rectum; in 15.4 per cent one half of the circumference was involved, and in 9.6 per cent one quarter the circumference was involved. It is estimated one or two years must elapse before a carcinoma will completely surround the rectum, so it is evident how long symptoms must have been present before diagnosis was made. In 50 per cent of these cases, diagnosis was not made by the original attending physician. In well developed cases, presumptive diagnosis of carcinoma can be made by digital and proctoscopic examination. It is only in rare instances that a tumor which is clinically cancer, turns out otherwise, though a biopsy of the tumor and microscopic examination should precede operation. I emphasize biopsy of the tumor for not too infrequently the surgeon removes a projecting mucosal tag and misses the tumor entirely. The pathologist is entitled to a good-sized piece of the tumor itself—not a timid mucosal nibble. The bleeding which usually occurs following the removal of an adequate biopsy is easily controlled by electro-coagulation. X-ray is still used by some physicians as a method of examination in suspected rectal carcinoma. This should be unqualifiedly condemned. The use of the x-ray upon an organ which can be completely visualized through a proctoscope, is without rhyme or reason. Small carcinomas will never show on an x-ray, and even quite large ones are frequently overlooked. Only with large obstructive growths can an abnormality be discovered. While x-ray is our best method of diagnosis in colonic carcinoma, in rectal carcinoma it is a positive menace.

Factors influencing operability are several. Aside from the physical condition of the patient, these have to do with the size, fixation, and local spread of the growth, the presence of absence of metastatic involvement, and the degree of malignancy of the tumor. Operability seems to vary with the experience of the surgeon, ranging from 30 to 70 per cent. With the occasional operator, the percentage is low—with the surgeon especially experienced in this particular field, the operability high. For example, operability at the Mayo Clinic is approximately 70 per cent, the Lahay Clinic 70 per cent, Rankin 71 per cent, Stone 67.6 per cent, T. E. Jones 68 per cent. In determining the percentage of operability, it must also be determmined whether operation is for palliation or cure. Local fixation rather than the size of the tumor, is more important as to operability. In many instances fixation may be due to inflammation rather than to actual tumor invasion. It is not always possible to determine which is the case at the time of examination. Following a preliminary colostomy, inflammatory fixation will usually loosen, but fixation due to tumor invasion will continue. If actual invasion of the seminal vessels, prostate, urethra, bladder or other adjacent organs has occurred the outlook is defintely poor, both because total removal is difficult or impossible, and because in most instances distant metastases have already occurred. The liver, regional nodes, lungs, and pararectal nodes are the most common sites of metastases. X-rays of the chest and spine are advisable in all cases before operation.

Dukes and Gabriel demonstrated the presence of metastatic lymph nodes in 62 per cent of cases of cancer of the rectum operated upon at St. Mark's Hospital. Gilchrist and David found positive nodes in 70 per cent of their series of cases. However, the mere presence of enlarged nodes does not indicate cancer. Of 337 nodes examined by Dukes and Gabriel which were thought to be cancerous, only 132 were actually malignant. In 950 nodes thought to be benign, 18 contained cancer. The presence of a few metastases in the glands or liver, does not necessarily contraindicate radical operation. These patients may often live several years. If the growth is operable locally, the patient is often made more comfortable by its removal. Allowing a sloughing and infected tumor to remain to invade the prostate, bladder or other adjacent organs, means a certain, slow, agonizing death for the patient.

The degree of malignancy is of some value in determining the type of operation to advise, and also in determining the prognonsis. There is some difference of opinion as to how accurate such grading may be, but it has been a satisfaction to me, even if it is only to decide whether it is a rapidly or slowly growing tumor, and the extent of invasion. By combining information obtained from both the Broders and Dukes method of classification, I have always felt I knew something more of the situation than would be possible otherwise. In Dukes classification, he includes only those tumors which are advanced enough to have invaded the muscular layer of the bowel wall. I think the prognosis would be still more accurate if a fourth group were added—those which are still limited to the mucosa.

Perhaps the greater cause of reduction in operative mortality of cancer of the rectum, is improvement in pre-operative preparation and postoperative care of the patient. This has been brought about by the great progress made in the studies of body chemistry. The day when a surgeon would send an anemic, dehydrated patient into the hospital and operate the next day is passed. In most cases five or ten days or even more, are needed for preparation. Many of the patient are anemic, have a low serum protein, and are depleted in minerals, vitamins, and sugar. Frequent transfusions, blood plasma, intravenous sugar and vitamins, will usually completely change the patient's general condition in just a few days. Cardiac and urinary condi-

tions should be carefully investigated, and appropriate treatment instituted where indicated. Obstruction is a most important complication, but contrary to colon cancers, obstruction in rectal carcinoma is infrequent. Obstruction in rectal cancer can usually be relieved by passing a catheter through the lumen of the growth. If this is impossible, an opening can usually be made through the tumor mass by fulguration or electro coagulation.

Many details make up the proper postoperative care of the patient, but a few are of greatest importance. Transfusions probably come first, both for combatting shock and promoting rapid uneventful convalescence. Operative blood loss is often more than the physician realizes, and in abdominoperineal cases there is a considerable postoperative ooze of blood and serum from the posterior wound. A transfusion of 1,000 c.c. of blood and/or serum during and immediately following abdominoperineal resection is a minimum requirement. An additional 500 c.c. on the following day is advisable, and still another 500 c.c. on the third postoperative day will do much to improve the patient's condition. Perienteric fluids are essential as long as nasal suction is continued. These must not be in too great quantities, particularly in elderly people. The first twenty-four hours we usually give 2,000 c.c. of Beclysl, 5 per cent glucose in isotonic Na Cl Sol and Thiamine hydrochloride 3 mg., Riboflavin 3 mg., Nicotin 25 gm. (per 1,000 c.c.) intravenously and 1,000 c.c. of normal saline subcutaneously. This amount is varied with conditions. In general, an amount of fluid intake which will cause the patient to excrete 800 c.c. of urine in twenty-four hours is sufficient.

Where the colostomy stoma is obstructed with a clamp, the Wangensteen type of nasal suction is of prime importance, and we feel it to be of value even in cases of simple-loop colostomy. In abdominoperineal resection, distention causes the patient great discomfort, increases the permeability of the bowel wall and may embarrass the circulation in the colonic stump to the point of causing necrosis and perforation. Much of this distention is caused by swallowed air and gas in the small intestines. Once it has passed beyond the ileocecal valve (if competent) it often cannot be syphoned back. Therefore we insert the tube preceding the operation, with the idea of preventing distention, rather than trying to relieve it after it has occurred. To be certain that no serious colonic distention may occur, the obstructed end of the bowel is invariably punctured with the cautery at the end of twenty-four hours. An indwelling catheter may be inserted at the time of operation, but since with nasal suction little if any disention will occur within twenty-four hours, it has seemed simpler to us to puncture the bowel the next morning after the wound is sealed off, rather than to Weitzel in a catheter at the time of operation.

Frequent turning of the patient with active and passive motion of the extremities, may be of value in preventing stasis and thrombosis formation. This in addition to deep breathing exercises and/or hyperventilation reduces stasis, and the frequency of lung collapse and pneumonia. Urinary complications are perhaps the most troublesome postoperative complications, particularly in males. Injury to the enervation of the bladder and often some degree of prostate enlargement, makes difficulty in emptying the bladder and some degree of cystitis frequent. Though troublesome, this is usually not serious unless a pyelonephritis develops. In males we leave an indwelling catheter in place for seven or eight days, changing it once or twice during this period. The catheter is attached to a bottle with continuous drainage so the bladder is kept continuously contracted. After this period we find the patient much better able to void and with less residual urine than if he had been catheterized periodically.

Another valuable agent, particularly in elderly persons with some cardiac damage, is the free use of oxygen. Some rise in temperature with an accompanying rise in pulse rate is usual. This means extra work for the damaged heart. Oxygen reduces the pulse rate and gives that organ a rest.

The choice of anesthesia varies with the individual, but in general I prefer spinal anesthesia, as do the majority of men doing a large amount of this work. It may be supplemented by small doses of intravenous sodium pentothal, if the patient is nervous or has any discomfort. Either pontocaine, pontocaine and glucose, or nupercaine solution, will give long enough anesthesia to complete the average abdominoperineal resection. Catell states the case of spinal anesthesia in these words, "It gives complete muscular relaxation; easy exposure of the site of operation, reduces intestinal manipulation to the minimum, and renders the closure of the wound easy."

In considering the type of operative procedure in so far as cure is concerned, operations may be divided into those which have to do with local removal or destruction of the growth and those involving more radical procedures. The first group is a small but very definite one. We have no right to subject the patient to a serious operation and a permanent colostomy, where a slighter and less dangerous operation would suffice. On the other hand the patient always prefers a procedure which involves less stay in the hospital and the avoidance of a colostomy. For this reason the surgeon must have some definite criterion upon which to base his decision as to the type of operation, and then to insist on radical operation where he deems it necessary, regardless of the plea of the patient. The statement of T. H. Jones, that the surgeon who does "little operations for little cancers and big operations for big cancers, never cures any," is worth remembering. I have developed a definite opinion as to the criterion for advising local treatment for rectal cancer and if the patient does not concur in this opinion, he does so at his own risk.

Small carcinomas which have a strap-like mucosal pedicle are suitable for local removal or fulguration. If the pedicle is short and thick, but with no induration which often indicates carcinomatous infiltration, it may be removed locally, together with a generous portion of the entire thickness of the bowel wall adjacent to the tumor. The pedicle and bowel wall is carefully examined microscopically for carcinoma. If cancer is present, radical operation is performed. In the case of small flat unpedunculated tumors, it is nec-

essary to be even more cautious in recommending local destruction or removal. These are usually of high-grade malignancy, and invasion of the bowel wall occurs early. If the growth is attached only to the mucosa, the mucosa where the growth is attached can be freely moved about on the underlying muscular layer, the growth can be destroyed locally. If the tumor is attached to the subcutaneous or muscular coats of the bowel, there will be a fixation at the point which precludes any mucosal movement. In this case radical operation is advisable. It is seldom that such a tumor is movable after necrosis has occurred, and this usually occurs by the time the tumor is 1.5 cm. in diameter. It means that tumors of this type are seldom seen early enough for local destruction, unless they are discovered in the course of routine proctoscopic examination. If they are advanced enough to produce symptoms, i.e., necrosis with bleeding and/or mucus, radical operation is indicated. In the case of more advanced lesions, it must be decided whether the operation is for palliation or is an attempt to secure a permanent cure. If a permanent cure is sought, the most radical operation compatible with a reasonable mortality, is the most advisable.

I believe the best treatment for radical cure of rectal carcinoma is based on the original operation by W. E. Miles. This is the one-stage abdominoperineal removal. With few exceptions any deviation from this method, is only advisable because the procedure is too hazardous. Age is no contraindication to the one-stage procedure. Many persons at 75 are a better surgical risk, than others at 60. Furthermore, elderly persons will usually stand one major operative procedure better than two in fairly close succession. Marked obesity is an unfavorable factor. Cardiac, urinary, diabetic, and other systemic diseases, unless of severe grade, are not as important as formerly thought. If cared for properly the patient will usually go through the surgical procedure without much trouble. As has been pointed out, secondary conditions such as anemia, dehydration, etc., are of little significance, since a few days of intravenous therapy will bring the patient back to normal. No patient should be subjected to an abdominoperineal procedure with unrelieved bowel obstruction. In rectal cancer, contrary to the case of colon malignancy, serious obstruction is rare in patients with operable tumors. If obstruction is present, it can usually be relieved by passing a catheter through the growth via the proctoscope. If this is impossible, a channel can often be fulgurated through the center of the tumor mass. In general, of patients suitable for radical operation, the one-stage abdominoperineal method can be employed in approximately 80 per cent.

With present technique of improving the patient's general health, I think there is less and less need for the two-stage abdominoperineal procedure of Lahay, or the perioabdominal procedure of Bartlett and Rankin. In the case of large fixed tumors, it is often impossible to decide whether the fixation is due to invasion of adjacent structures or merely to inflammatory reaction. In these cases the Lahay procedure has some advantages. The first stage of the Lahay operation to all practical purposes is a double-barrel colostomy. If the tumor remains fixed and further operative procedure seems inadvisable, the patient still has a serviceable palliative colostomy. On the other hand, if the growth does shrink and becomes movable, the surgeon can complete the radical abdominoperineal procedure, rather than having to be content with a posterior resection as he would if he had done the usual loop colostomy. In a few patients because of severe physical impairments or extreme age, a simple loop colostomy followed by a posterior resection may be advisable. The method should not be forgotten in dealing with rectal malignancy, but its use should be restricted to relatively few cases.

Lately there has been a revival and extension of former operative procedures in rectal cancer with the idea of avoiding a colostomy. If the growth can be resected and an anastomosis made without greater chance of recurrence of the tumor or a greater operative risk, this is very desirable. It is my opinion that these two requirements can be fulfilled only in a very small group of patients, and the use of this method must be limited to a very small percentage of cases. Since all patients wish to avoid a colostomy, the surgeon may be tempted to extend the use of this operation to cases where it is not really advisable.

Perineal excision of rectal cancer is in my opinion seldom advisable. Even though the growth is small and low in the rectum if the sphincters are to be sacrificed, a colostomy is advisable. Lynch and Hamilton have been very enthusiastic about perineal excision without a colostomy and the bowel control which results with this operation. Babcock also advocates what he terms a perineal colostomy. He has even transplanted a number of abdominal colostomies to the perineal region to the satisfaction of the patient. I believe the "satisfaction" of these patients is created by the enthusiasm of the surgeon. After observing both types of bowel outlets, I am thoroughly convinced that a midline abdominal colostomy is more cleanly and more easily cared for than a sphincterless opening in the perineum.

The final question is that of palliation. In some patients where there are metastases in the liver, lungs, or lymph nodes, the growth is still easily resectable locally. In these cases life will often be prolonged and the patient be made more comfortable by the removal of the growth, rather than by allowing it to remain to invade the bladder and other adjacent organs. Unless undue surgical risk is involved, the local removal of such a growth should always be given serious consideration. Where the growth is so extensive it cannot be removed locally, several procedures are of value. Partial destruction of the tumor mass by fulguration and/or coagulation will often lessen the rectal tenesmus, and discharge of mucus and other irritating material. Preceded by colostomy this is probably the best method of palliation. As the tumor invades adjacent structures the use of opiates is the only treatment which will give relief. In a few cases, deep x-ray treatment with very extensive doses will cause a marked secession of the tumor and a reduction in pain, but without exception in my experience, the benefits achieved have been very

temporary in character. In some instances small non-therapeutic x-ray exposures are of psychological value.

My personal experience with radium is limited. It does not cure cancer of the rectum, other than small lesions which may also be cured by excision or coagulation. In these cases there is no advantage in resorting to radium. Its greatest field therefore is limited to palliation. I have seen a considerable number of cases where radium has been applied elsewhere. It is only fair to say that these patients were those who had not reacted favorably. Those who had a favorable result had no reason to consult a physician. In this group are also included those with a factitial proctitis from radium applied to the cervix. Without exception these patients have given a history of distressing reactions of months duration. No doubt radium has a place in the treatment of this condition, but I do believe its value has been over-emphasized and many patients are made more miserable by its use. There is no question but that it should be used only by those who work with it daily, thoroughly understand its application and know its dangers.

In conclusion I wish to briefly summarize the operative procedure and operative mortality of the last 100 cases seen by Doctor Anderson and myself. These cases extend over a four-year period. The oldest patient in this group was ninety-one years and the youngest thirty-one—the average age being 63.9. By decades, there were five who were in the third decade, fourteen in the fourth, twenty-two in the fifth, thirty-seven in the sixth, eighteen in the seventh, three in the eighth, and one over ninety years. Seventy-five of these patients were subjected to operative procedures which preoperatively we thought might lead to a permanent cure, though some of these proved to be inoperable when they came to operation. Nineteen were subject to palliative procedure, and in six no operative procedure was deemed advisable. Fifty-seven of this series had one-stage abdominoperineal resections. One had a two-stage Lahay abdominoperineal resection; five had a colostomy followed later by a posterior resection; four had a Lynch operation or perineal resection without colostomy, though one of these patients subsequently had a colostomy done; one had a local resection by the Harrison Cripps method; four had fulguration and coagulation; three had local surgical removal; nineteen had palliative operative procedures (these were colostomy, 14; fulguration and coagulation, 3; local surgical removal, 2; and cecostomy, one). These with the six inoperable cases make up the series of one hundred. There were five hospital deaths. Three were in the fifty-seven abdominoperineal resections—an operative mortality of 5.25 per cent. One was from a cerebral accident and one from coronary occlusion. The third was considered a perivascular collapse by a consultant. No autopsy could be obtained. One death due to embolus followed a local surgical removal, and one death due to coronary occlusion followed a simple colostomy.

As these statistics woud indicate our preference as to procedure is the one-stage abdominoperineal operation. The youngest in this group was thirty-eight years old, and the oldest seventy-seven years. The average age was fifty-seven years. The average age for the entire group was somewhat greater (63.9 years), which would indicate that to a certain extent, the younger better-risk patients were selected for this operation. This group of patients was seen over a four-year period, but the only essential changes in their disposition if seen today, would be an increase in the number of one-stage abdominoperineal procedures, and the practical elimination of perineal excision without colostomy.

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Discussion

Dr. H. B. Zimmermann, Saint Paul: I do not know whether or not Dr. Fansler intended to include growths of the rectosigmoid junction in this paper. Lesions in this region can cause obstruction. I am quite sure the procedure he suggested, that of passing a tube through the obstructed portion, is extremely hazardous, and I know I would hesitate to burn a hole through such a lesion, with a coagulating current. I would think it much safer in high lesions of the rectum or low ones in the sigmoid to make a preliminary colostomy, either in the right or transverse colon.

Dr. H. E. Hullsiek, Saint Paul: I would like to say a few words on the subject of colostomy. I venture to say if we took a vote of this society and asked each one what he would do if he had carcinoma of the rectum, about 60 to 70 per cent would do nothing about it because of the feeling against colostomy. When I was in Detroit with Dr. Hirschman he took such a vote among the students, who voted almost 100 per cent that they would go without operation rather than have a colostomy. I think this attitude is one of the greatest deterrents to operative cure. The family physician, who usually sees these patients first, refers them to someone else, and the former is usually against a permanent colostomy because of what he thinks and has seen in the past. I don't think it is fair for the doctor to decide for the patient with carcinoma of the rectum: a person who has one is an entirely different person when he knows he has a carcinoma from what he was before, or from the normal individual. When he suddenly finds out he has a carcinoma he has an entirely different outlook on life. He knows he is going to die a slow death from bleeding, sepsis and obstruction. Therefore one must remember, when advising a patient what to do, to try to put oneself in that patient's place. It is a question of whether one would rather *live* after a mutilating operation, or *die* a slow, agonizing death. Sometime this winter I (with Dr. Zimmermann) am going to get half a dozen or more people who have had this operation and are quite happy, and bring them before a staff meeting to try to prove to the men that a patient can have a mutilating operation and have functions changed and still have a pretty good time. I think an important point is the changing of the dismal, indifferent outlook of many physicians as to the treatment of these people. I operated on a man in 1937 who was forty years old. He was in my office last week. He has had a permanent colostomy for six years and said last week that he was happier than he had ever been in his life. I have a woman who was operated on three years ago who has adjusted herself completely. Dr. Zimmermann has a minister who is still preaching in his pulpit. In spite of all that, there are many of you and many I know of, who, if they had a carcinoma of the rectum, would take about 10 grains of morphine and be through. I am trying to prove there is a worth-while future for these people and that there is something better than dying a slow death of sepsis and obstruction.

Dr. R. T. La Vake, Minneapolis: This thesis has been most interesting.

As success in the treatment of malignancy depends largely upon early diagnosis, it behooves us all not to omit a digital examination of the rectum whenever we make a pelvic examination. Dr. Fansler emphasized this many years ago. Strangely, but fortunately, I have never picked up a malignancy of the lower bowel by digital examination. However, many other lesions have manifested themselves that were unsuspected and needed treatment.

Dr. Fansler has stressed preoperative preparation. Would that this admonition were more generally followed in all major operations. It is surprising how many people are operated upon without any thought of preoperative rest in bed, hydration, or high carbohydrate intake to fill the liver with glycogen; and, even when indicated, without transfusions to build up hemoglobin and serum content. Where preoperative preparation obtains, I am confident that the postoperative course is much easier.

Dr. Fansler's remarks as regards the superiority of the one-stage operations were instructive. A few years ago, Dr. Wayne Babcock, whom Dr. Fansler mentioned, showed me several of his postoperative cases and seemed to draw similar conclusions to those of this thesis.

Now a word concerning Dr. Hullsiek's discussion regarding colostomy. His attitude bears out my conclusion after following the course of one of my best friends, who, following radium treatment of carcinoma of the cervix, developed a complete bowel obstruction. At operation, the surgeon could not determine whether the obstruction was due to the extension of malignancy or to inflammation. At any rate, nothing could be done but a colostomy. With this she lived a happy useful life for twelve years, and died a cardiac death.

Dr. M. W. Alberts, Saint Paul: Relative to the symptomatology, carcinoma of the rectum has always been characterized by the absolute absence of pain, and so it is with a great deal of surprise in reviewing the cases of rectal carcinoma at the Ancker Hospital a few years ago that about 50 per cent gave as one of their admitting complaints definite pain. When we analyzed these cases further, it was found that about 50 per cent of the cases were inoperable, and it was this group that gave the history of pain. May we conclude from this small series of cases that pain in rectal carcinoma should make us suspicious of the fact that the lesion may be inoperable.

I, too, believe that classification of the growth is extremely important and certainly helpful in guiding us with the prognosis, but such a classification must be done by one thoroughly versed in such a procedure. As an example, some years ago I operated upon a man with an obstructive lesion of the transverse colon; this was resected and the gross appearance led one to assume that it was a large polyp. The pathological diagnosis was a Grade 1 carcinoma and yet within three and one-half months this man died with extensive retroperitoneal and regional metastases.

Dr. Fansler did not go into the differential diagnosis and although digital and proctoscopic examination is sufficient to diagnose correctly a great majority of these lesions, biopsy is often imperative to arrive at the correct diagnosis. Certain inflammatory conditions often found in the rectum associated with such diseases as amebic dysentery, endometriosis, et cetera, require biopsy.

Dr. James Johnson, Minneapolis: Regardless of what our expressions may have been here tonight, we must confess that carcinoma is a pretty uncomfortable dis-

ease at best. Unfortunately, when it is in the rectum, it becomes an added burden because of the colostomy.

It is certainly uncomfortable news and often quite a shock for a patient to be told that he has a cancer. It is not necessary to break the news in a blunt fashion, but it should be done rather gradually, and one should spend some time with them in discussing the brighter side of the picture until they develop the philosophy that enables them to carry on a "carcinoma life." At first, every distant ache and pain is often interpreted as being due to a spreading carcinoma. All these popular ideas must be dispelled and much can be done to put them in a state of mind that enables them to continue a happy and optimistic existence.

Dr. Philip F. Donohue, Saint Paul: That posterior resection of the rectum for carcinoma may cause postoperative retention of urine in the male has been repeatedly observed. The condition occurs when dissection of the rectum and sigmoid from the muscular and fascial structures of the pelvis interferes with the innervation of the bladder through injury to the parasympathetic nerve fibers or to the hypogastric plexus itself. The result is impairment of tone and force of the detrusor muscle of the bladder. In most of the cases, the degree of urinary retention increases and may lead to complete inability to void. Cystoscopic examination usually shows nothing more than slight or moderate intraurethral intrusion of the prostate, a condition which had caused little or no urinary difficulty before operation. Following resection of the rectum and disturbance of the parasympathetic nerves, this degree of prostatic enlargement assumes clinical importance because it is sufficient to produce resistance to the impaired force of the detrusor muscle, causing urinary obstruction. Relief of the obstruction may be expected to follow transurethral resection of the enlarged prostate. My experience with this complication in three cases has caused me to wonder if the surgical procedure of dissection of the rectum from the pelvic structures might not be altered so as to avoid injury to the bladder nerves.

Dr. Fansler, in closing: First, I wish to thank all the discussors for their kindly reception of this paper. Several brought out in their remarks that most patients are fearful of a colostomy; but, the fact is that a colostomy, if properly cared for, causes little inconvenience. Dr. Hullsiek and Dr. Zimmermann say they often have a patient who has a colostomy talk to a patient who is confronted with a similar necessity. I, too, have found this advantageous. In cases of obstruction, a soft rubber catheter can often be passed through the growth (either rectal or sigmoid), and thus eliminate the necessity of a preliminary colostomy. Likewise, in some instances a small opening may be made through the growth by electro coagulation or fulguration. I had hoped Dr. James Johnson would say something on this subject, since he presented an early paper on this method.

Dr. Alberts mentioned the fact that a large percentage of patients with cancer of the rectum have pain, contrary to a popular conception. This has also been my experience in well-developed cancer. Early cancer is not painful unless the anal canal is involved. Since, however, the majority of cancers we see are well developed, the majority do have discomfort.

Endometriosis does sometimes invade the rectum, become ulcerated, and simulate carcinoma. I have noted that most growths which are extrarectal in origin, give me that impression even though they have ulcerated through the rectal wall. Absolute diagnosis, however, must depend upon biopsy.

Dr. Donohue has mentioned urinary retention. I think it is agreed that primarily this is due to injury to the bladder innervation; or, in the male, to enlargement of the prostate. I think its continuance is often due to the surgeon allowing the bladder to become greatly over-distended postoperatively, which breaks down the musculature of the bladder wall.

The meeting adjourned.

A. G. Schulze, M.D.
Acting Secretary.

INTERNATIONAL HEALTH

Postwar international coöperation is already getting under way in the field of health protection.

Signs of action along this line as well as intense desire for all nations to work together to protect the health of all people everywhere appeared in statements from the health directors of Great Britain, the Soviet Union, China, Egypt, Australia and seven Latin American countries to the wartime conference of the American Public Health Association in New York.

"The special problem of the present and the future is malaria and I can assure you that the Governments of our two peoples have completely interlocked their plans for dealing with this terrible menace," the Right Honorable Ernest Brown, Britain's Minister of Health, declared.

Large scale plans being made "by our Governments acting in concert" for postwar relief of peoples being freed of Naxi tyranny cited by Mr. Brown give further evidence that postwar international coöperation in health protection is reaching the action stage.

"Let the Pan-American ideal, the greatest of the ideals of America, be not alone a political and economic ideal, but be also an ideal of life and vigor," Mexico urged through Dr. Victor Fernandez Manero, director of the Department of Public Health.

"Just as we are fighting this war for global security, so we must work together for global health," Dr. Wei Tao-Ming, Chinese Ambassador to the United States, declared.

This theme appeared also in the statement from Prof. Vladimir Lebedenko, representative of the Soviet Red Cross and Red Crescent of the U. S. S. R. who said, in part, that erasing "the horrible ravages of war" must be done "not by one people but by all together, in unity for the betterment of life and for the future of all mankind."

Dr. Guillermo Garcia de Paredes, Director of Health for Panama; Jules Thebaud, Director General of Haiti; Dr. Albert Recio, Director of Health and Social Welfare for Cuba, also urged greater international cooperation in health protection.——*Science News Letter,* December 25, 1943.

Minneapolis Surgical Society

Meeting of November 4, 1943

President, H. O. McPheeters, M.D., in the Chair

Secretary, John M. Feeney, M.D.

A TECHNIQUE FOR TRANSURETHRAL RESECTION OF THE PROSTATE

C. D. CREEVY, M.D.

Minneapolis, Minnesota

A steady growth of interest in the surgical relief of prostatism has paralleled the equally steady increase in longevity which has produced so many economic problems and so much governmental controversy. The average age of the patient who seeks operation for prostatism at the University Hospital is sixty-nine years. The number of males living past the age of sixty-five in the United States doubled between 1911 and 1935, and longevity has increased considerably since that time. Similarly the number of operations upon the prostate at the University Hospital increased from twenty-five in 1928 to 264 in 1942. Obviously this has resulted both from the fact that an increasing number of men has survived into the prostatic age, and to a greater readiness on their part to submit to operation.

The first attempts at surgical relief of prostatism were made long ago, but reasonable success and comparative safety are rather recent developments. Some forty years intervened between Billroth's first piecemeal removal of the prostate through the perineum, and Young's refinement of the perineal enucleation of the gland around 1900. Probably because Freyer's success with suprapubic enucleation occurred at about this same time, there grew up a rivalry between the "perineal" and the "suprapubic" operators.

These two approaches had been perfected considerably before anyone had the temerity to advocate a wide application of the closed or transurethral operation which, however, really antedated the others. Guthrie attempted to incise the contracted prostate in 1834 with a sort of urethrotome and Mercier and Civiale shortly thereafter devised cutting instruments for the same purpose. Bottini (1877) invented a cautery for incision of the prostate through the urethra, but the results of all were bad, presumably because the operations were done blindly. Freudenberg in 1900 and Wishard in 1902 devised instruments to permit transurethral cautery incisions under vision, but the reflected light which was used was inadequate, and they abandoned them in favor of the recently perfected open operations.

Young devised the punch which was the real forerunner of the modern resectoscopes in 1909, but advocated its use only for contracted glands. He, too, was handicapped by the use of reflected light which made visualization of the prostate very poor. In 1920 Caulk devised a similar instrument which used a cylindrical cautery instead of a tubular knife, thus lessening the danger of hemorrhage (while increasing that of sepsis), but his system of visualization was that of Young. However, he was the first to advocate the punch operation in actual enlargement of the gland, and he aroused the interest of others in the method and so stimulated the development of the modern punches of Braasch and Bumpus, Thompson, McCarthy, and Foley. With any of these instruments large amounts of tissue may be removed under direct vision with relatively little risk by the surgeon who has sufficient skill.

In the meantime, Maxmillian Stern devised the first resectoscope which utilized a wire loop to remove tissue with undamped or cutting current from a high frequency or surgical diathermy machine. The loop was too small and fragile, and satisfactory means of controlling hemorrhage were lacking. His primitive instrument was made really practical by T. M. Davis and later was further improved by McCarthy. The use of the Stern-McCarthy resectoscope was popularized by Alcock. All three of these men had the advantage of improved diathermy machines which supplied damped current for the control of hemorrhage by electro-coagulation.

It remained for Nesbit in 1939 to demonstrate the importance of an instrument which could be manipulated with one hand, leaving the other free to push (with a forefinger in the rectum) parts of the gland forward to facilitate their excision, and to judge by palpation the amount of tissue remaining. This was a most important step in the transition between the early attempts to "cut a channel" through the obstructing prostate, and the present-day effort to excise all or nearly all of the abnormal tissue, so that one may with some propriety speak of "transurethral prostatectomy."

Indications for Operation

The indications for surgical removal of obstructing prostatic tissue are fairly clear, and depend upon two factors: the degree of retention of urine, and the severity of symptoms. In general, the existence of persistent or frequently recurring complete retention definitely requires operation, while the presence of an incomplete retention with sufficient residual urine to threaten the integrity of the kidneys is another concrete indication for surgery. On the other hand, serious subjective difficulty in emptying the bladder may demand relief in the absence of any great amount of residual urine.

So much may be conceded. It is upon the type of

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operation to be done that sharp differences of opinion develop, and often lead to acrimonious disputes simply because it seems to be human nature to try to make the other fellow see things your way and to employ only your favorite operation. There are, however, several indications for the transurethral as compared to the open operations, upon which agreement is general. These include contracture of the prostate, and carcinoma with local extension or metastasis which makes cure impossible. A third indication is the small obstructing benign hypertrophy. For the experienced resectionist, the configuration of the gland (apart from its size) is not important.

Differences of opinion develop when one attempts to define a "small" benign hypertrophy, and become extreme when the selection of an operation for the large gland comes up. In this connection it should be understood, as Foley has pointed out, that each surgeon must determine for himself what degree of enlargement makes it unwise for him to undertake transurethral resection because it will take too long and thus lead to excessive blood loss, shock, high mortality, and repeated operations. It is foolish to deny that differences in skill make for considerable variation among surgeons in the proper application of transurethral resection. If X can remove 150 grams in an hour with safety and a good result, shall I, if I cannot do as well, demand that he abandon the operation in favor of enucleation?

Dr. Young frequently inveighs against the transurethral operation because it may fail to cure a carcinoma concealed within a spheroid of benign hypertrophy, while enucleation may succeed. Since "cures" in these hidden carcinomas discovered in enucleated specimens by the pathologist average less than 25 per cent even when the follow-up period is but two to five years, and since concealed cancers are found in but 8 per cent of benign hypertrophies, the universal substitution of resection for enucleation would involve the theoretical loss of a 2 per cent chance to cure concealed carcinoma of the prostate. This 2 per cent chance is more than compensated by the lower mortality of the closed operation.

Transurethral resection has become popular because, in good hands, the mortality is low, hospitalization is short, and there is no painful open incision through which urine must drain for a time after operation. All of these factors favor the closed as against the open operation. There is, however, no more warrant for saying that there is no risk or that the results are invariably perfect, than there is for saying these things about any other major surgical operation, least of all about enucleation of the prostate. The beginner will do many incomplete operations, and even the experienced surgeon will have occasion to apologize for unexpected bad results but, in my opinion, transurethral resection is indicated in most obstructing prostates which need operation. The three contraindications which I recognize include ankylosis of one or both hips in a position preventing access to the gland by this route, a gland so large as to make the operation too hazardous, and a carcinoma so localized as to offer a chance of cure by radical perineal prostatectomy.

Technique

Anesthesia.—Spinal anesthesia is most satisfactory for the average patient because of its safety and the relaxation of the field which it alone affords. It may well be supplemented by pentothal in the apprehensive patient, or replaced by it when the gland is small.

Instruments.—The armamentarium needed is rather elaborate. First is a good, reliable surgical diathermy machine which generates its cutting current with a vacuum tube and its coagulating current by a spark gap (Burdick, Wappler). A machine intended to generate both types of current from a single type of generator gives a current which is adequate for one purpose but inadequate for the other. Second is a resectoscope which can be operated smoothly and easily with one hand. At least one spare telescope (and preferably a whole spare instrument) must be at hand to guard against failures of equipment. Nesbit's instrument as supplied to him is an excellent one, but I have been unable to secure one which works smoothly and without jerking. Hence I have had constructed in the Apparatus Shop at the University a modification of the Stern-McCarthy instrument which is used almost precisely as is Nesbit's. Mr. John Phelan and his associates are responsible both for the design and for the construction of the instrument. In my own experience, attempts to carry out complete resection without the use of a finger in the rectum have been unsatisfactory, a good deal of tissue being overlooked posteriorly; hence a "two-handed" instrument such as the Stern-McCarthy is to be avoided.

Contamination of the rectal finger is prevented by use of the O'Conor sheath. The urethra is lubricated by the injection into it of K-Y jelly, and sounds up to 30 French are passed. If this discloses any tightness in the urethra, an urethrotomy is made behind the constriction, and the resectoscope inserted through it. To do otherwise is to insure periurethritis and postoperative strictures. If the narrowing is too far back to permit its short circuiting by an urethrotomy, resection should not be done.

After an inspection of the prostatic urethra and bladder so painstaking that one memorizes the configuration of that particular gland, the technique of Nesbit is followed in removing the obstructing tissue. The lateral lobes are freed from one another, and so allowed to drop posteriorly, by an initial excision of strips of tissue in the midline anteriorly, extending from the vesical aspect of the gland almost to the external sphincter. Beginning in front and following the curvature of the capsule, one then cuts a groove between the capsule and the lateral lobe so as to detach the lateral lobe on one side from the surgical capsule except posteriorly. Bleeding is controlled by electrocoagulation, and the maneuver is repeated on the opposite side, thus leaving the two lateral lobes partially devascularized and attached behind by a slender pedicle. Then, with a finger in the rectum pushing the remnants of the lateral lobes forward they are rapidly excised in a piecemeal fashion together with the median lobe, and bleeders are again controlled. It is important that no time be wasted in

repeated inspection of the field between cuts if a large gland is being resected. The operation is completed by excision of irregular fragments left behind by the original maneuvers, always with a finger in the rectum when one works in the posterior quadrant, both to push the remaining tissue forward, and to guard against cutting too deeply. When the gland is very long, it may be preferable not to try to cut the whole length at one stroke, but to work at two or three different vertical levels in succeeding phases of the operation.



Figure 1. Large stone in bladder associated with small benign hypertrophy of prostate.



Figure 2. Man, sixty-two years old, in good general condition. Hypertrophic prostate of 138 grams enucleated suprapubically with primary closure of the bladder. Catheter removed in eleven days; patient went home to country in thirteen days.

Pieces of prostate and blood clots are evacuated with a special syringe, remaining bleeding points are coagulated, and a Foley bag of proper size is inserted, then partly inflated and drawn down into the prostatic cavity, where it is distended to compress oozing surfaces. It is indispensable when glands of any size are resected.

Since excessive loss of blood is at once the greatest obstacle to a complete operation and the greatest hazard to the patient, all of the irrigating fluid used during the operation is saved in a large galvanized can, and the blood in it is measured by the method of Nesbit and Conger. If the amount lost is excessive for that patient, it is replaced at once by plasma or whole, citrated blood.

The Foley bag is connected to a closed, sterile irrigating system utilizing the Baumrucker clamp, and irrigations are carried out at gradually lengthening intervals (every few minutes at first). In the absence of complications, the patient is allowed up in a chair on the following day, but the catheter is not removed until the third day. If he does not empty his bladder comfortably, the catheter is reinserted and, if the surgeon has any doubt whatever as to the completeness of the operation, it is repeated five to seven days after the first session. The average patient leaves the hospital on the seventh postoperative day, supplied with a typewritten instruction sheet concerning limitation of activities and consultation with his local physician.

It is impossible to overemphasize the importance of a trained, alert staff during the immediate postoperative period, since plugging of the catheter or an overlooked drop in blood pressure may result disastrously.

Using these methods, it has been possible to resect, with reasonable safety, as much as 199 grams of tissue at one sitting, and as much as 250 grams at two, although I am not prepared to claim that such large glands should be treated in this manner, nor that it is by any means always feasible to do so. It may be entirely impracticable, owing to vascularity of the gland and to the height of the blood pressure, to make a satisfactory one-stage resection in a gland much smaller than this, but I do believe that the urologist can find plenty of precedent among the general surgeons for seeking to extend the field of a particular operation, and need not apologize for doing so himself.

Discussion

Dr. Theodore H. Sweetser: As Dr. Creevy says, each of us must appreciate his own limitations at any particular time and under particular circumstances. While I treat 80 or 90 per cent of my patients with prostatic obstruction by the transurethral methods, I try to consider each as an individual problem, and for me there

are still some indications for suprapubic and for perineal enucleation of the prostate.

For me it is easier, neater, and less risky to remove a large bladder calculus by cystotomy, to be followed by a transurethral or suprapubic removal of the causative prostatic obstruction, than it is to try to do the entire job transurethrally (Fig. 1).



Figure 3. Man, seventy years old, with dysuria, pyuria, leukocytosis, blood urea nitrogen of 111.1 mgms. per 100 c.c., and myocardial fibrosis. After cystography, the bladder was drained through a perineal urethrotomy by inlying catheter for eight days with resultant drop of the blood urea nitrogen level to 57 mgms. After preliminary transfusion, a perineal prostatectomy was performed (176.5 grams), and he went home, healed and voiding well without leakage, sixteen days after the operation.



Figure 4. Man, eighty-four years old, with acute urinary retention, pyuria, fever, leukocytosis, anemia, myocardial damage, and blood urea nitrogen of 57 mgms. After drainage by inlying catheter for eight days a perineal prostatectomy was performed (310 grams). He gained strength slowly and his moderate anemia and nitrogen retention persisted in spite of transfusions and even though he felt well when he went home.

Some large prostates, largely intravesical and in patients who are fair risks, may be removed suprapubically. If hemostasis is carefully secured by fulguration, the bladder may be closed tightly with two layers of sutures and drained through the urethra by a Foley bag catheter just as after the transurethral operation (Fig. 2).

Certain very old and feeble men with urinary infection, uremia and very large prostates seem to me to tolerate perineal prostatectomy better than transurethral resection in several stages (Figs. 3 and 4). With increasing experience in transurethral surgery I less often elect this procedure since it does entail some added risk of incontinence. Each case deserves an individual appraisal.

Since Dr. Davis of Omaha, lecturing here a year ago, complained of the drying and heating of KY in the urethra during resection, and since the representative of A.C.M.I. (manufacturers) more recently spoke of the electrical conductivity of KY and other water-soluble lubricants, I have returned to the use of mineral oil and vaseline as the lubricants for my resectoscope sheaths. I still prefer KY for other cystoscopic work.

We at St. Mary's Hospital are happy to support Dr. Creevy's statement of the value of the Nesbit-Conger method of estimating blood loss during resections. We feel that it should be applicable also to other surgical work; I believe that Dr. Kinsella has applied it to his chest surgery. Sponges used during any operation can be wrung out into water and the blood loss quickly estimated.

Dr. Creevy mentioned pilocarpine as an aid in establishing voiding after resections. Prostigmine and physostigmine (eserine) are other similarly acting drugs which I have found valuable for the same purpose. One must use them cautiously in patients suspected of coronary disease.

Pulmonary embolism is one complication which Dr. Creevy did not mention, and which I had thought had been practically banished from the field of transurethral prostatic surgery by our avoidance of recumbency and insistence on exercise. But I think that it must be remembered that such an accident can and still does occur occasionally.

Dr. Ernest L. Meland: This has been a very excellent and concise discussion of transurethral resection. Attention has been called to the fact that it is applicable to any type of obstruction at the vesical neck. The ability to resect transurethrally, large glands, is dependent upon the acquired skill of the individual and not upon any arbitrary standards that are laid down. The individual, who feels, because of his limitations, that the operation is applicable only to bars, contractures, small median lobe hypertrophies and carcinomas of the prostate will naturally select either suprapubic prostatectomy or perineal prostatectomy for the larger obstructions at the vesical neck. This is proper since the functional results attained in any operative procedure on the bladder neck depends upon the completeness with which the gland is removed. In those instances where residual urine remains or there are marked subjective symptoms following transurethral resections, it is necessary that a second stage be carried out in order to effect complete

removal of any remaining tissue. Various men have shown repeatedly that the gland can be removed quite completely down to the capsule, but that in the larger gland unless tissue is completely removed there will be devitalized areas which will be a cause of continuing pyuria and possibly recurrent bleeding at a later date. Flocks at the University of Iowa showed several years ago that this was the result of making these areas avascular by cutting off their blood supply.

The question often arises as to the permanence of the results following transurethral resection. Here too this depends upon the completeness of removal. Unfortunately when transurethral resection first became popularized many statements were made to the effect that removal of enough tissue to relieve the residual urine would result in shrinkage of the remaining portion of the prostate to the point where it would not give difficulty again. Unfortunately this has since proven untrue, since these patients develop recurrent retention with associated subjective symptoms and possibly a persistent pyuria necessitating reoperation at a later date. Those resections which were carried out in the early 1930's have not been attended with the good results compared with those that have been done in the last few years.

Attention should be called to the measurements of blood loss during an operation, since it is easy to overlook the actual volume of blood loss unless an attempt is made to measure it. In those instances where the loss is insignificant no importance attaches to it. However, in the larger vascular gland it is not uncommon to lose 500 to 700 c.c. of blood and an accurate measurement is made by checking the hematin value in the irrigating fluid and adequate replacement of blood by transfusion can be made. Failure to replace the blood volume may lead to a persistently low blood pressure accompanied by oliguria and ending with uremia which if not corrected is often fatal.

Many of these patients without residual urine and without undue subjective symptoms will have a pyuria which will persist for several weeks following operation. Since the healing period is not complete until at least six weeks have elapsed, it is useless to give the patient any urinary antiseptics with the idea of hastening the healing process. Experience has shown that administration of one of the sulfonamide drugs in moderate dosages for a period of a week will often make the urine clear and microscopically free from pus when the medication is stopped eight weeks following operation.

Dr. Philip F. Donohue (St. Paul): I also wish to congratulate Dr. Creevy on his most informative and complete presentation. This report shows that transurethral resection has come a long way since its introduction twelve or thirteen years ago and is ample proof that this method is now firmly established as an effective surgical procedure in the relief of bladder neck obstruction.

I would like to make a few remarks regarding the applicability of transurethral resection. In the first place I wish to say that I am a proponent of the operation and believe the method can be safely and successfully performed by the competent resectionist in any case of benign prostatic hypertrophy. It alone is the proper procedure for the relief of obstruction due to established carcinoma of the prostate and obstructions caused by inflammatory contracture of the vesical neck and median bar. A safe operation for the patient and a successful outcome will require a highly developed technique and will include the resection of an adequate amount of prostatic tissue but the avoidance of extravasation of urine which will occur when the aponeurotic sheath is perforated by carrying the resection too deeply. Proper technique will also include care and gentleness in instrumentation of the urethra in order to avoid urethral abscess and urethral stricture. In the majority of cases the obstruction is completely removed in one sitting, but in a small number of cases the removal of an adequate amount of tissue will require two stages and may call for resort to perineal urethrotomy to accomplish resection of unusual intravesical projections of the prostate. The aim of transurethral resection is to provide the patient with a large, free, urinary stream, complete emptying of the bladder, the return of normal interval between voidings, and clear urine. Complete emptying of the bladder and a satisfactory stream is obtained in practically every case and variable degrees of dysuria and pyuria may be expected in all cases for six to eight weeks which is the average period required for complete healing of the prostatic fossa. Sulfonamides are generally helpful in clearing the infection, but some patients continue to show cloudy urine and to experience urethral burning and nocturia. Cystoscopic examination may reveal the presence of intruding, devitalized prostatic tissue partially deprived of blood supply by the operation and by infection. Resection of this tissue may be expected to relieve the dysuria and to clear the urine; however, in a small number of cases the urine continues cloudy with pus and bacteria, and some degree of dysuria persists. In these cases the transurethral operation has provided reasonably good bladder function, but, because of persisting dysuria and pyuria, has fallen short of the perfect result. On the other hand open surgical enucleation as by perineal prostatectomy may be expected to bring about the return of the normal voiding interval and clear urine in nearly every instance, and for this reason may be favored by the surgeon as the operation of choice in the so-called younger group of patients with prostatic obstruction. I am referring to patients in the 55 to 65 age group who remain free of cardiovascular-renal disease, who have a long life expectancy, and therefore, will undergo open enucleation with very little increase in risk. In the remaining age groups from 65 to 75, and over 75 years, an increasing number of patients have advanced cardiovascular renal disease as well as other degenerative changes, and the risk of open enucleation increases until it becomes prohibitive. Unquestionably transurethral resection is a boon to these older patients because of the almost neglible risk to life and the short period of convalescence which will outweigh the slightly morbid state associated with persistent dysuria and pyuria in a small number of cases.

In closing these remarks, I wish to predict an even brighter future for transurethral resection. It is the operation of choice for older men. In certain good risk patients in the lower age group, the operation will compete for favor with open enucleation.

THE PATHOLOGY OF THE PROSTATE

J. S. McCARTNEY, M.D.

Minneapolis, Minnesota

In this discussion of the changes found in the prostate in the various disease conditions, which are found, I wish to speak first of prostatitis. Inflammation of the prostate may be acute or chronic, and due to a variety of organisms. In young adults the common cause is gonorrhea. It seems hardly justifiable to say, as is stated in some textbooks, that most prostatitis, whether acute or chronic, is gonorrheal. In elderly men it is a much more reasonable assumption, that infection incident to prostatic hypertrophy and use of a catheter is probably not gonorrheal, but due to other bacteria.

Probably most infections of the prostate arise by extension from the urethra. Occasionally, the infection reaches the prostate through the blood stream. The infection may be severe and result in abscesses or may be rather of the nature of a diffuse interstitial inflammation. Either type of inflammation causes an enlarged

and tender prostate. The acute prostatitis may become chronic and last for a long time. It is not an uncommon finding in prostatic hypertrophy to find a rather extensive infiltration of lymphocytes and not infrequently minute abscesses are encountered. In many of these instances there has been no reason for the clinician to suspect the presence of prostatitis. Tuberculosis is occasionally encountered in the prostate and may give rise to extensive cavitation. There is evidence to indicate that often the tubercle bacilli have reached the prostate through the blood stream, rather than by extension directly from some other part of the urinary tract.

In prostatic hypertrophy, areas of hemorrhagic necrosis are rather frequently found. These are called infarcts. The way in which they arise is not clearly understood. Almost constantly, squamous metaplasia is present in adjacent ducts. The relation of this squamous metaplasia to the development of the infarcts is not at all clear. A somewhat comparable situation is present in the pancreas in instances of acute hemorrhagic pancreatitis, where again the relationship of the squamous metaplasia of the ducts and the development of the acute hemorrhagic pancreatitis is not known. Thrombosis, embolism, arteriosclerosis, and trauma have all been advanced as possible ways in which infarcts may develop in the prostate.

It is usually assumed that the prostate enlarges with age. Until the onset of puberty and growth of the testes the prostate is a very small organ. After the prostate has once reached its adult size it remains approximately the same size until late in life, averaging from fifteen to twenty grams in weight, unless it is the site of hypertrophy or inflammation.

Hypertrophy of the prostate great enough to cause urethral obstruction occurs in about 8 per cent of men over sixty years of age. The hypertrophy involves all lobes, but not necessarily to the same degree. The middle lobe may be much more markedly hypertrophied than the lateral lobes and project into the bladder and block the orifice of the urethra. Hypertrophy causes elongation, narrowing and angulation of the urethra. The cut surfaces of the prostate show multiple large and small rounded areas separated by dense connective tissue. Some of the nodules may be cystic. Commonly the smaller nodules are near the urethra and the larger more towards the periphery. The smaller ones commonly are made up of fibrous tissue and smooth muscle with few or no glands. This has led to the conception that prostatic hypertrophy starts in as fibromyomas which are later invaded by glands, and that prostatic hypertrophy starts in as fibromyomas which are later invaded by glands, and that prostatic hypertrophy is somewhat similar to a myomatous uterus.

Autopsy studies have revealed that in approximately 15 per cent of hypertrophied prostates, carcinoma is also present. Often there is room for argument as to whether many of these very small lesions are to be regarded as real carcinomas or as areas of hyperplasia in adenomas

By whatever method an enlarged prostate has been removed, it is the duty of the pathologist to be on the lookout for a carcinoma. To find a carcinoma is somewhat easier when one has the whole gland to examine, because then any areas of unusual induration, yellow areas, or places which are crumbly, are more easily found, and such areas should be the ones most carefully scrutinized. Since transurethral prostatectomy has come into vogue, it is much more difficult to pick out the above-mentioned types of tissue. The pathologist is greatly helped if the pieces last removed are submitted separately, because it is rather generally believed that most carcinomas develop in the posterior portion of the prostate. In the examination of material removed by transurethral resection, not less than twelve pieces should be examined, before one dares say that carcinoma is not present. In suspected cases of carcinoma of the prostate a punch biopsy obtained through a Silverman needle may give the desired information. It is to be remembered that the piece of tissue obtained in this manner is very small and the results should be considered of value only when a positive diagnosis of carcinoma is made. The carcinoma may be a well differentiated adenocarcinoma or a markedly anaplastic or a scirrhous carcinoma.

Other tumors occasionally occur in the prostate such as leiomyoma and sarcoma, but are rare. Leukemic infiltrations are also found at times.

REMARKS ON PREPARATION OF MANUSCRIPTS

C. B. DRAKE, M.D.

Saint Paul, Minnesota

It is like bringing coals to Newscastle to attempt to tell many of you how to write a paper or the form the paper should assume, as so many of you have written many articles and some of you have written books. I don't claim to be an authority on the subject; editing has been an avocation with me rather than a vocation. But I welcome the opportunity to say a few words to you about the writing of medical papers.

In the first place, I think it is a good rule not to write unless one has something to say. When you consider that there are about twelve hundred medical periodicals in existence, you can realize that there are a lot of medical papers published. But I think that when anybody has anything to say medically, he ought to say it.

As far as the method of writing a paper is concerned, we probably all have our own ideas. I have written a few and I have found that the easiest way is to take reading notes on cards which are numbered, putting down a full and accurate reference on each card.

It is well to make a preliminary outline before starting to write a paper to assure logical arrangement. The material contained on the cards which it is desired to include in the paper can then be transcribed under the proper heading and the number of the card noted so that later bibliographical reference in the paper may be easily and accurately made.

The title should be brief but descriptive. Your papers appearing under the Proceedings of the Minneapolis Surgical Society are indexed in the journal at the end of the year and a brief title that gives some idea of what the paper is about is essential in indexing.

I want to mention a few words that are often misused. So many authors misuse the word "case." They operated a case. You cannot operate a case; you operate on a patient. A case, according to Dorland, is the instance of disease with its attendant circumstances. The patient is not the case; the patient dies or recovers; the case terminates fatally or ends in recovery.

Another word is "pathology." So often it is said that there is no pathology present—that is, no science which deals with disease. What is meant is that there is no pathological condition present, no disease.

The word "temperature." It is often stated that the patient has no temperature. A patient always has a temperature even when he is dead. The patient has no fever.

Then the use of "I," "we," "the writer," and "the author." If you use one term you should use it the whole way through. Do not in one place say "I," then "we" and then "the author." There is no objection to saying "I" when you mean I.

Then "acute abdomen." This phrase is often used. A patient may have an acute inflammation in the abdomen such as an acute appendicitis but there is no such thing as "acute abdomen."

"Diseased condition" is frequently used when disease condition is meant.

In the preparation of the manuscript, rules are rather uniform and pretty well established. Some journals have minor differences, but as a rule, a manuscript should be typed in double space so that corrections can be easily made and the printer can see the corrections. This is impossible with single spacing. The manuscript must be the original copy and not the carbon copy. It is hard on the printer as well as the editor to have to read the carbon copy and, of course, the printers are reading all day long and it is hard on their eyes. The author should keep a carbon copy of the paper to compare with the proof when it comes back to he will know what liberty the editor has taken. I realize that there is often room for a difference of opinion and try not to change an author's meaning. If that occurs the author has the opportunity to make changes in the proof.

Illustrations should be sent in separately and not pasted on the manuscript pages. Each illustration should have the name of the author indicated, the top of the illustration should be designated, and the illustration numbered. It is always well to put the author's address at the end of the paper so we may know where to send the proof.

The author's name, of course, appears below the title followed by M.D. I can see no reason why a title such as F.A.C.S. should not follow the M.D. Medical school appointments may well be added below the name of the author. The name of a clinic in which a person works does not belong under the author's name but may appear in a footnote to designate his association.

The bibliography causes more difficulty than any other one item. Unless a list of references is very complete it should be called References rather than a Bibliography. All you have to do is to look at a copy of MINNESOTA MEDICINE and see what information should appear in the bibliography. First is the name of the author and his initials followed by a colon; then the title of the paper. We do not capitalize the words in the title unless they are proper nouns or the reference is to a German article. Then comes the name of the journal in which it appears properly abbreviated, with the volume number, a colon, the page numbers and the date. It is generally well to put the inclusive number of pages, as this gives the reader an idea of the extent of the article referred to. In case of reference to a book, the author's name and initials are given, followed by a colon, the title of the book, location (the city) of the publisher and his name, and the date of publication. If reference is to a page in the book or if there is more than one volume, the number of the volume and the page number should be given.

I want to say that we always try in the editorial office to coöperate with the Minneapolis Surgical Society and the other societies that publish their proceedings in MINNESOTA MEDICINE from time to time. It is a difficult job for the secretary or recorder to get the material in promptly. If one paper does not come in, the publication for that meeting is held up; or if one individual who has discussed the paper does not send in his copy, publication is held up. Publication of the proceedings of the Minneapolis Surgical Society have been sporadic, as you know, because members have not done their part in turning in their material.

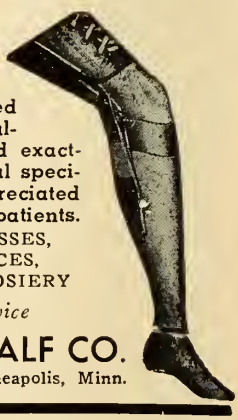
Sometimes we have had reprints of articles turned in instead of original papers. If we are going to publish an address given before the Society and index it, we can scarcely print an article that has appeared elsewhere. So I would suggest that reprints be not sent in.

———

The meeting adjourned.

FREDERICK A. OLSON, M.D.
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✦ Reports and Announcements ✦

MEDICAL BROADCAST FOR JANUARY

The following radio schedule of talks on medical and dental subjects by William A. O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association and the Minnesota State Dental Association:

January 1— 9:15 a.m. (WCCO) Malaria
11:30 a.m. (WLB) Medicine in the News
January 8— 9:15 a.m. (WCCO) Dysentery
11:30 a.m. (WLB) Medicine in the News
January 15— 9:15 a.m. (WCCO) Filariasis
11:30 a.m. (WLB) Medicine in the News
January 22— 9:15 a.m. (WCCO) Relapsing Fevers and Leishmaniasis
11:30 a.m. (WLB) Medicine in the News
January 29— 9:15 a.m. (WCCO) Dental Surgery
11:30 a.m. (WLB) Medicine in the News

NATIONAL CONFERENCE ON MEDICAL SERVICE

The 18th annual meeting of the National Conference on Medical Service will be held on February 13 in the Red Lacquer Room of the Palmer House in Chicago.

This conference is the only discussion meeting of its kind on the social and economic relationships of medicine and it provides the one opportunity of the year for representatives of organized medicine from all parts of the country to get together for informal discussion of the grave issues confronting the profession today.

The conference is not in any sense an official body of organized medicine. But action initiated in its discussions last year was crystallized in the formation of the New Council on Medical Service and Public Relations by the House of Delegates of the American Medical Association in June. Its forum affords the rank and file of medicine an important opportunity for expression which may have far-reaching results for the future of medicine.

The program this year is not yet complete but it is understood that it will stress the postwar problems and responsibilities of medical organized medicine which must provide not only for the orderly reëstablishment of thousands of medical officers returning from military service, but must foster and guide a constructive national program for the improvement and better distribution of medical services to the American people.

The 1944 conference officers are W. L. Burnap, M.D.,



From the painting by George FrederickWatts, "HOPE"

AS EVER-GROWING numbers of cases yield to liver therapy, pernicious anemia emerges from among the one-time "incurables." Today, men and women who must, can face this condition with justifiable optimism—for there is hope . . .

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of Fergus Falls, Minn., President, and C. L. Palmer, M.D., of Pittsburgh, Secretary.

In accordance with an established precedent the meeting is held on the day before the Annual Congress on Medical Education and Licensure so that as many as possible can arrange to be present at both meetings. Every member of organized medicine is cordially invited to attend and every state association is especially urged to see that it is well represented.

CONTINUATION COURSE IN OTOLARYNGOLOGY

Center for Continuation Study, University of Minnesota, announces a continuation course in otolaryngology for physicians who limit their practice to ophthalmology and otolaryngology. It will be given February 7-11, 1944. Registration limited to fifty physicians.

Because the rooms of the Center for Continuation Study are occupied by military units the course will be given in one of the leading downtown hotels in Minneapolis, and at the University of Minnesota Hospitals. Early registration is desirable in order that advanced hotel reservations may be made. Upon receipt of $3.00 the enrollee will be notified to communicate at once with the hotel in order to secure space. Further information may be obtained at the Center for Continuation Study, University of Minnesota, Minneapolis 14, Minnesota.

BLUE EARTH VALLEY SOCIETY

At the annual meeting of the Blue Earth Medical Society held in November, the following officers were reelected to serve another year: President, Dr. M. D. Cooper, Winnebago; secretary-treasurer, Dr. J. L. Mills, Winnebago.

Dr. J. J. McGroarty of Easton presented a paper on "Acute Pancreatitis" and Dr. A. W. Sommer of Elmore spoke on "Premature Infants."

LYON-LINCOLN COUNTY SOCIETY

Dr. Titus C. Kreuzer of Marshall will serve as president of the Lyon-Lincoln County Medical Society this year as a result of his election to office at the annual meeting last fall. Other officers elected for the year are: Dr. V. H. Valentine, Tracy, vice president; Dr. W. G. Workman, Tracy, secretary-treasurer.

Appointments to committees are as follows:

Contact, Advisory and Public Health Committee—Drs. B. C. Ford, Marshall; A. D. Hoidale, Tracy; E. T. Sanderson, Minneota; P. E. Hermanson, Hendricks; A. L. Vadheim, Tyler; George Friedell, Ivanhoe.

Legislative Committee—Drs. F. D. Gray, Marshall; W. H. Valentine, Tracy.

Dr. W. W. Yaeger of Marshall was elected delegate to the State Association meeting with Dr. P. E. Hermanson as alternate.

RENVILLE COUNTY SOCIETY

Dr. A. M. Fawcett of Renville was elected president of the Renville County Medical Society for the coming year at the annual meeting held in November. Dr. R. C. Billings of Franklin was elected vice president,

and Dr. R. C. Erickson of Hector, secretary-treasurer. Dr. W. A. Brand of Redwood Falls was reëlected censor.

Delegate to the State Association meeting is Dr. J. Dordal of Sacred Heart. Dr. A. A. Passer of Olivia was chosen alternate.

ST. LOUIS COUNTY SOCIETY

"Price Control and Inflation" was the subject of the address given by Oscar B. Jesness, chief of the division of agricultural economy at the University of Minnesota, before members of the St. Louis County Medical Society at their annual meeting in Duluth, December 9, at the Northland Country Club.

Dr. Walter E. Hatch took office as president for the coming year and the following were elected to serve with him: Dr. C. N. Harris, Hibbing, vice president; Dr. R. P. Buckley, Duluth, secretary-treasurer. Dr. W. J. Ryan was chosen as president-elect to take office in 1945.

WASHINGTON COUNTY MEDICAL SOCIETY

At the annual meeting of the Washington County Medical Society held on December 14, the following officers were elected for 1944: President, Dr. Ray G. Johnson; first vice president, Dr. Carnot H. Sherman; second vice president, Dr. George McH. Ruggles; secretary-treasurer, Dr. E. Sydney Boleyn; delegate, Dr. E. Sydney Boleyn; alternate, Dr. W. R. Humphrey.

The scientific program was presented by Dr. Everett K. Geer, who interpreted 72 x-ray films taken from positive reactors among teachers and pupils in the Stillwater schools. The number of tests made was 659.

WOMAN'S AUXILIARY

Mrs. F. S. McKinney, *President*
Minneapolis, Minnesota
Mrs. J. R. Aurelius, *Publicity Chairman*
Saint Paul, Minnesota

GOODHUE COUNTY

Mrs. R. F. Hedin, publicity chairman, reports that a well-planned program has been adopted for the year under the guidance of Mrs. W. W. Liffrig, president.

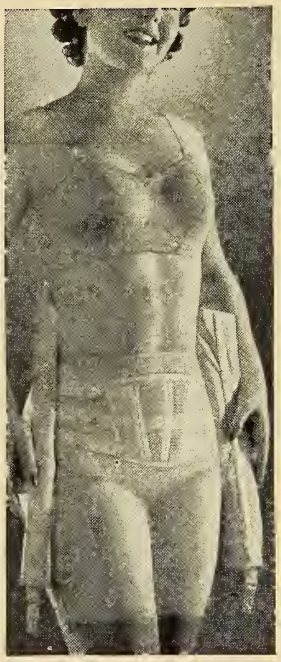
At the first meeting on October 14 at Mrs. E. M. Baldigo's home, it was decided to send four *Readers Digest* subscriptions to servicemen overseas. Mrs. R. V. Sherman secured the names of volunteers to sell Christmas Seals at the postoffice and the group voted to support the Medical and Surgical Relief program. Mrs. Baldigo was appointed chairman of the latter committee.

At the November meeting at Mrs. Hedin's home, Mrs. Liffrig read a letter from Our Lady of Good Counsel Free Cancer Home in Saint Paul thanking the members for their offer to help the Home in securing drugs and making dressings. This work will come under the supervision of the Red Cross Committee headed by Mrs. L. E. Claydon.

At the December meeting at the home of Mrs. M. H.

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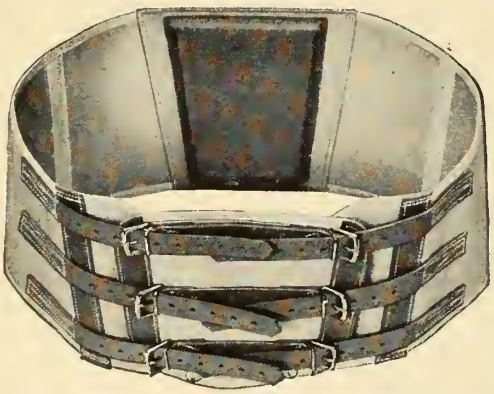
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Cremer, Mrs. R. V. Sherman discussed the Wagner-Murray-Dingell Bill with the group. A five-dollar Christmas Seal Bond was purchased by the Auxiliary. The dinner meeting at the St. James Hotel with the doctors for December 16 was discussed and plans made to read letters from auxiliary members who were away with their husbands in service.

Mrs. Liffrig's very active committee members are: *Program*—Mrs. R. V. Sherman; *Health and Hygiene*—Mrs. R. Aanes; *Ways and Means*—Mrs. G. Kimmel; *Public Relations*—Mrs. Howard Claydon; *Historian*—Mrs. E. M. Baldigo.

HENNEPIN COUNTY

The Annual Silver Tea for Sarahurst rehabilitation home for patients from Glen Lake Sanatorium was held Friday, December 3, in the Medical Arts Lounge.

Mrs. Harold Wahlquist presided at the short business meeting which was followed by the Christmas program carrying out a Scandinavian theme under the direction of Mrs. Rhoda Snell Glad as narrator, Mrs. Frank Judgeon, violinist, and Mrs. Richard Giere, pianist.

Mrs. W. F. Widen, tea chairman and her committee wore Scandinavian costumes. Wives of all doctors in the armed services stationed in this area were guests.

The auxiliary will also participate in the all-city servicemen's Christmas with donations of cookies, fruit cakes, cigarettes and gifts.

NICOLLET-LE SUEUR COUNTIES

Nicollet and Le Sueur County Medical Society and Auxiliary met at the Cook-E-Jar in St. Peter Wednesday for a 6:30 dinner in honor of Dr. and Mrs. E. W. Miller. Dr. Miller is leaving St. Peter Hospital for Anoka where he will be superintendent of the hospital. Gifts were presented to both Dr. and Mrs. Miller.

Dr. Wilbur Rucker of the Ophthalmology section at Rochester spoke to the men and the women spent the evening making cancer dressings for Our Lady of Good Counsel Free Cancer Home in St. Paul.

WASHINGTON COUNTY

Mrs. F. S. McKinney, state president, was guest speaker at the meeting held in November at the home of Mrs. J. W. Stuhr.

Mrs. McKinney talked on the recruitment of nurses and explained that medical auxiliaries throughout Minnesota will assist the State Nurses Association in this work. Mrs. F. M. McCarten has been named local chairman.

The State President also urged the group to support the Medical and Surgical Relief project and Mrs. Stuhr writes that good results were obtained by auxiliary for this cause.

Prizes were awarded for the best essays written for the T.B. contest and the prize winning papers will be read at a later meeting of the group.



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Of General Interest

Dr. Ferdinand L. R. Koch has returned to New York City where he has accepted a teaching position at Bellevue Hospital.

* * *

Dr. Melvin Vik has returned to his practice at Onamia following a two months' stay in Arizona because of ill health.

* * *

Dr. Donald C. Balfour of Rochester was recently made president-elect of the Inter-State Post Graduate Medical Association of North America.

* * *

Dr. D. T. Schuele of Chatfield left for Norfolk, Virginia, December 26, to report for duty as a Lieutenant in the medical corps of the Navy.

* * *

Dr. Donald J. McNairy has recently been named Junior Consultant on the Mayo Clinic staff in the Dermatology Department at Rochester.

* * *

Dr. Howard M. Odel of Rochester received his commission of Lieutenant in the medical corps of the Navy and reported for duty at the National Naval Medical Center, Bethesda, Maryland, in December.

Dr. W. J. Bushard has sold his practice at Bird Island to Dr. Howard E. Johnson of Ortonville and has accepted a fellowship in the Eye Department of the University Hospitals, Minneapolis.

* * *

Dr. C. L. Sherman of Luverne has been appointed by Governor Thye as a member of the State Medical Advisory Board for the fourth district of Selective Service in Minnesota.

* * *

Dr. Edward Burch, Saint Paul, has just been made a Lieutenant Colonel in the Medical Corps and is now Executive Officer at O'Reilly General Hospital, Springfield, Missouri.

* * *

Sad news has been received in the report of the death in Africa of Lieutenant William W. Adson, son of Dr. A. W. Adson of Rochester, on November 22, following wounds received in action.

* * *

Dr. Leo C. Culligan of Minneapolis has announced his association with Dr. Arthur C. Strachauer and Dr. Frank R. Hirshfield at 350 Medical Arts Building, with practice limited to surgery.



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Dr. Cecil A. Wilmot of Litchfield received his captaincy in November. Since entering the Army in September, 1942, he has spent nearly a year overseas and is at present in a station hospital somewhere in the Aleutian area.

* * *

Dr. Wade R. Humphreys of Stillwater attended the Inter State Medical Assembly in Chicago in October and went on from there to visit his former home in Virginia. Dr. Humphreys returned the latter part of November.

* * *

Dr. Philip N. Bray of Duluth has left for duty in the United States naval reserve medical corps. He has been commissioned a Lieutenant Commander and is stationed at the U. S. Navy Hospital in Long Beach, California.

* * *

Dr. C. H. Sherman of Stillwater has taken over the practice of the late Dr. E. V. Strand of Bayport, continuing his office hours at Stillwater. Dr. Sherman practiced in Bayport from 1923 to 1929, when he left to take graduate work.

* * *

Dr. Richard N. M. Nay, former secretary of the Association of Fellows of the Mayo Foundation, was named president of the group at the recent annual election. Dr. J. J. Manning was elected vice president and Dr. L. P. Hoyer, secretary. The new officers all reside in Rochester.

* * *

Dr. Cecil J. Watson, head of the department of medicine in the University of Minnesota Medical School, will be president of the Central Society for Clinical Research in 1944. Dr. Watson's election was announced following a meeting of the Society in November. The society membership covers the north central states.

* * *

Dr. Bruce Jarvis of Lowry is leaving his practice there to resume his work in missionary hospitals in China, where he spent some time before coming to Lowry six years ago. Dr. Jarvis will take a refresher course at the University of Minnesota before going to his assignment in China.

* * *

Dr. D. O. N. Lindberg, formerly senior physician and director of roentgenology at the State Sanatorium, Iowa City, Iowa, is the new superintendent of Buena Vista Sanatorium, Wabasha, succeeding Dr. B. J. Terrell, who is now affiliated with the Sanatorium at Nopeming.

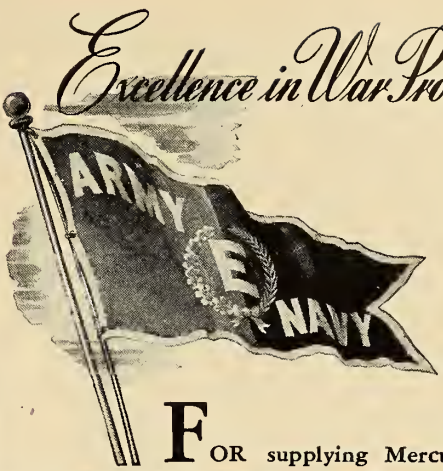
* * *

Dr. Gershom J. Thompson, formerly of Rochester, has been on duty until July of this year in Norman, Oklahoma, since entering the service fourteen months ago. On July 12 he was assigned as Chief of Urology at the National Naval Medical Center, Bethesda, Maryland, and on September 1 he was promoted to the rank of Commander.

* * *

Several positions are open for medical officers at the United States Veterans Hospital, Minneapolis, according to an announcement received from the office of the

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MEDICINE—Courses to be announced in January.

GYNECOLOGY—Two Weeks' Intensive course starting February 7. Clinical Course.

OBSTETRICS—Two Weeks' Intensive Course starting February 21.

ANESTHESIA—One-Week Course in Continuous Caudal Anesthesia for Obstetrics.

OPHTHALMOLOGY—Clinical Course.

OTOLARYNGOLOGY—Special and Clinical Courses.

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* * *

Dr. Gaylord W. Anderson, on leave from his post as head of the division of preventive medicine and public health, University of Minnesota Medical School, has been made head of the Army's division of medical intelligence.

Since being given leave by the university in 1942, Dr. Anderson has been serving in a public health capacity in the office of the surgeon general of the Army, Washington, D. C. He has recently been promoted to the rank of Lieutenant Colonel.

* * *

Major General James Carre Magee, retired on May 31, 1943, as Surgeon General of the Army, has been named executive officer of the information service of the division of medical sciences of the National Research Council. His duties will be to make available medical information pertaining to the war. This service was established by the Council under a recent grant of the Johnson and Johnson Research Foundation, New Brunswick, N. J., by which $75,000 was made available. In the service all his life, General Magee supervised the enormous expansion of the medical corps and the medical program which has led to the remarkable health record of the Army thus far.

* * *

The following Minnesota surgeons were accepted into fellowship in the American College of Surgeons in 1943: Harold G. Benjamin, Minneapolis; John B. Beuning, Saint Cloud; Leonard K. Buzzelle, Minneapolis; John A. Dahl, Minneapolis; John C. Feuling, Bovey; Richard W. Giere, Minneapolis; John H. Grindlay, Rochester; George E. Hudson, Minneapolis; Luverne W. Johnsrud, Hibbing; Bert G. Levin, Saint Paul; Edward C. Maeder, Minneapolis; Carl H. Mattson, Saint Paul; Wallace P. Ritchie, Saint Paul; Otto J. Seifert, New Ulm; Louis Sperling, Minneapolis; Lloyd A. Stelter, Minneapolis; Robert J. Tenner, Rochester; Alfred Uihlein, Rochester; Francis C. Usher, Rochester.

* * *

Under command of Lieut. Col. Wallace D. Hunt, assigned to the Minneapolis Health Department by the U. S. Public Health Service, organization of an emergency hospital unit is being completed there. Composed for the most part of members of the Minneapolis General Hospital staff, the unit will be made up of fifteen physicians and forty nurses, all to be sworn in as members of the U. S. Public Health Service. Arrangements already have been made for quick occupancy of any one of several large hotels should an emergency so require. At such time the military authorities would evacuate the premises and equip the building for hospital purposes. The emergency hospital unit then would take over until military authorities sent in their own doctors and nurses. The organization being developed in Minneapolis is part of a nationwide program of establishing such hospital units near military bases.

In Memoriam

HARRY T. KING

Dr. Harry T. King of Minneapolis died October 10, 1943, at the age of forty-seven.

Dr. King was born in Minneapolis, May 30, 1896. He graduated with a B.S. degree from St. Thomas College, Saint Paul, in 1918 and obtained his medical degree from Marquette Medical School in 1922. After serving his internship at Madison General Hospital, he took postgraduate training at the Lying-In Hospital, New York City.

Dr. King practiced in Minneapolis and was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

* * *

FRED SHEPPARD

Dr. Fred Sheppard of Hutchinson, Minnesota, passed away September 25, 1943, following an illness of several years.

Dr. Sheppard was born in Boon Lake Township, Renville County, Minnesota, July 5, 1869. He attended high school at Mankato and obtained his medical degree from the University of Minnesota in 1895. After taking postgraduate work at the Chicago Polyclinic, he practiced from 1895 until 1897, at Henning, Minnesota, and from 1897 until 1898, at Lester Prairie, Minnesota.

Dr. Sheppard was married August 18, 1900, to Magnolia Streeter of Hutchinson. Mrs. Sheppard passed away in 1932, and a son, Dale, at the age of twenty-one. One son, Hal, who lives in Seattle, and three grandchildren survive.

Dr. Sheppard served as deputy coroner of McLeod County and was a member of the McLeod County Medical Society, the Minnesota State and American Medical Associations.

* * *

ELWYN VINCENT STRAND

Born in Marine-on-the-St. Croix, Minnesota, on May 24, 1902, Dr. Elwyn V. Strand yielded to the "Grim Reaper" at his home in Bayport, Minnesota, on Saturday, November 27, 1943, after a long illness.

He received his primary education in Marine-on-the-St. Croix and Stillwater High School. His academic and medical degrees were obtained at the University of Minnesota, 1928, and he served his internship at Ancker Hospital, 1928-1929, after which he located and practiced medicine in Bayport until his death.

He did postgraduate work at Polyclinic Hospital, New York City. He was a member of the Washington County Medical Society, Minnesota State Medical Association, American Medical Association, Phi Alpha Pi medical fraternity, and the honorary medical fraternities of Incus and Alpha Omega Alpha.

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He served as president of the Washington County Medical Society and was very active as chairman of several important committees; he also served as chairman of the Lakeview Memorial Hospital staff, of which he was a member. He was coroner of Washington County for several years and health officer of Bayport and Lake Elmo. He was actively interested in Boy Scouts and their doings. He was president of the Bayport Realty Company, the Bayport Improvement Club, and the Bayport School Board. He was also a member of the Lions Club, the Cotillion Club of Stillwater, Monitor Lodge No. 424, the Vasa Order of America, a life member of the Washington County Historical Society, and worshipped at the First English Lutheran Church of Bayport.

He was married to Miss Gertrude Marie Johnson in South Saint Paul July 5, 1930. Surviving him are his wife, four sons, his mother, two brothers and four sisters, besides numerous other relatives and a host of admirers and friends.

Funeral services were held November 29, 1943, and interment took place at Bayport. Members of the Washington County Medical Society attended as honorary pallbearers, and members of the Washington County Auxiliary were present in a body, as were also the members of the Lions' Club.

As a man Dr. Strand was blessed with a pleasing personality and lasting qualities that endeared him to all who knew him. He could see all sides of a problem and be fair to them and fair in his judgment of those who entertained different views. His capacity for work was exceptional, even up to the very last; he never neglected any task or shunned responsibilities he assumed or had passed on to him.

In his profession he enjoyed a success seldom attained at so early an age, and his fellow practitioners conceded him the friendships and honors due a generous and ethical competitor.

He was an earnest and diligent student and eagerly embraced every opportunity to improve his knowledge and master any new discovery of practical value in his work to keep it up to the high standard he had set for himself.

He knew medical ethics and always observed its principles in his practice. He will be greatly missed in this community and many regret his passing.

—E. Sydney Boleyn

EDWARD A. ZAWORSKI

Dr. E. A. Zaworski of Minneapolis, a leader of Polish American activities in Minnesota, died suddenly of a heart attack, November 25, 1943, at the age of fifty-nine.

Born at Ord, Nebraska, February 4, 1885, Dr. Zaworski obtained his high school training at Quincy, Illinois, and an A.B. degree at Quincy College, Quincy, Illinois,



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in 1906. He graduated from the Creighton University Medical School of Omaha, Nebraska, in 1911.

Dr. Zaworski came to Minneapolis in 1911, where he has been active in practice and civic affairs since. He was vice president of the Northeast State Bank in Minneapolis and president of the Minnesota Polish Publishing Company, which issues *Nowiny Minnesokrie*, the only Polish paper in the Northwest. He was also chief medical examiner of the Polish White Eagle Association, a medical examiner of the Northeast Minneapolis Draft Board and has directed the Community Fund and Red Cross drives in Northeast Minneapolis. He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

Dr. Zaworski is survived by his wife, a daughter, Mrs. M. L. Harrington of Minneapolis, and four sons, all in service.



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Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

NASCENT ENDOCRINE THERAPY. John Franklin Ritter, M.D. 317 pages. Caldwell, Idaho: Caxton Printers, 1940.

SURGICAL ERRORS AND SAFEGUARDS. Fourth Edition. Max Thorek, M.D., LL.D., D.C.M., F.I.C.S. Professor of Surgery, Cook County Graduate School of Medicine, Chicago, etc.; Foreword by Sir Hugh Devine, M.S., Hon. F.R.C.S. (England). 1085 pages. Illus. Price, $15.00, cloth. Philadelphia: J. B. Lippincott Co., 1943.

YEAR BOOK OF GENERAL MEDICINE, 1943. George F. Dick, M.D., et al. 784 pages. Illus. Price, $3.00, cloth. Chicago: Year Book Publishers, 1943.

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THE USE OF SULFONAMIDES IN ABDOMINAL SURGERY

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Saint Paul, Minnesota

THE purpose of this paper is to report some impressions concerning the use of sulfonamide drugs in surgical wounds, especially in the peritoneal cavity to prevent peritonitis. Our interest was first stimulated following the work of Jenson, Johnsrud, and Nelson concerning the local implantation of sulfonamides in compound fractures. Shortly after the publication of their paper in 1939, we used sulfanilamide in the peritoneal cavity of three patients. Two of the patients had peritonitis and subsequently died. One patient who had an infected hematoma in the mesentery after being kicked by a horse, made a surprisingly uneventful convalescence after the abscess was drained and sulfanilamide placed in the abscess cavity. In these three cases, 12 grams of sulfonamids were placed in the peritoneal cavity. We subsequently learned that such large doses are unnecessary and may be dangerous.

Loria, in 1937, used prontosil and prontylin intramuscularly in a case of generalized hemolytic peritonitis with a successful result. In 1939, Long and Bliss, in addition to the oral and parenteral administration of sulfonamides, suggested its use in solution through a draining sinus, into the abdominal cavity, following surgical drainage. In 1941, Mueller reported using powdered crystalline sulfanilamide directly in the peritoneal cavity after surgery. This was followed by an additional report with Thompson. Rippy used sulfanilamide intraperitoneally in treating gunshot wounds of the abdomen. Ravdin, Rhoads, and Lockwood believe sulfanilamide therapy to influence favorably the peritonitis of appendicitis which is usually a mixed infection. Wangensteen implants sulfanilamide about the anastomosis in gastric resections and colonic resections. Varco found that the mortality of esophago-jejunostomy after complete gastric resection was remarkably lowered if sulfonamides were placed around the sutured sites. Ravdin and Long stated that in the victims of abdominal injuries crystalline sulfanilamide was of great benefit to the patients that were operated upon. Loria, in a series of 100 cases of penetrating gunshot wounds of the abdomen admitted to the New Orleans Charity Hospital, reports forty-nine cases receiving some form of chemotherapy plus surgery with a mortality of 18.4 per cent. Of fifty-one patients receiving no sulfonamide treatment, the mortality was 50.9 per cent. Moorhead's report indicates that the administration of local sulfonamide materially reduces wound morbidity and the mortality. Riba and Ateus state that infected wounds treated locally with powdered sulfathiazole uniformly healed more rapidly and showed less reaction than did similar untreated wounds. When sulfathiazole powder was introduced immediately into a contaminated wound, bacteriostasis of the staphylococcus aureus could be accomplished. When the drug was introduced into an infected wound, the extension of the infection was arrested and reparative processes were initiated. Closure of infected sulfa-

From the Department of Surgery, University of Minnesota Medical School, Minneapolis, Minnesota.

Read at the annual meeting of the Minnesota State Medical Association, Minneapolis, Minnesota, May 19, 1943.

thiazole-treated wounds was followed immediately by general improvement of the animal. Walter and Cole implanted sulfadiazine in the peritoneal cavity and wounds of sixty-eight patients operated upon for various lesions, most of which had peritoneal contamination. A similar study in which sixty-two patients were used was conducted with sulfanilamide. They obtained an incidence of wound infection of 4.04 per cent with sulfadiazine and 14.05 per cent with sulfanilamide. Since there was more contaminated cases in the sulfadiazine series, they believed that sulfadiazine was superior to sulfanilamide in the prevention of wound infection.

In evaluating the effect of sulfonamides in the prevention of peritonitis, it is important to have adequate controls. While a drug may seem to do wonders after a certain surgical procedure, it is important to know what would happen if the drug were not used. The most flagrant violation of this "control" idea is in reports of the results of treatment of peritonitis following an appendicitis by means of sulfonamides. In our experience, the mortality of appendical peritonitis treated without operation and without sulfonamides varies from 4 per cent in children to 20 per cent in adults. While the use of sulfonamides may lower these mortalities, a more important factor would be the earlier diagnosis and treatment of appendicitis.

In clinical cases, in evaluating the effect of sulfonamides on surgical mortality in the prevention of wound infection and peritonitis the following factors also have to be taken into consideration:

(a) The experience of the operator. If one does his first cases well, all things being equal, he will do the next cases that much better. This factor is rarely taken into consideration in reporting the results of operations for carcinoma of the rectum, appendicitis, etc., with and without the use of sulfonamides. The sulfonamides are usually used in the later cases and the better results could be attributed to the increased skill and experience of the surgeon just as well as to the use of the drug. In one stage abdomino-peritoneal resection for carcinoma of the rectum, the mortality is about 6 to 10 per cent in the hands of most experienced operators whether sulfonamides are used or not.

(b) Alternate cases should be used. To compare cases treated in one period with those of another period is fraught with error as is best illustrated in the cases of empyema where there is a seasonal variation in the virulence of the disease.

(c) The time factor. If sulfonamides are used before gross infection is present, the results logically will be better than when they are used in the presence of gross suppuration.

What Wounds Should Receive Sulfonamides

1. *There is no indication for the use of sulfonamides in "clean" surgical cases.*—A few years ago, Dr. N. K. Jensen and the author studied the effect of sulfonamides in the healing of clean wounds in dogs. Under pentathol anesthesia, incisions were made with sterile precautions, through the skin, fascia, and muscle on each side of the vertebral column of a dog. The wounds were sewed in layers with interrupted cotton sutures, sprinkling sulfanilamide in the layers on one side but not the other (control). There was no difference in the incidence of wound healing or wound infection.

2. *In infected wounds, the sulfonamides are not of much value, unless a debridement of the grossly infected tissue is carried out first.* Even then it was questionable if the healing time is shortened as compared to controls. The action is chiefly dependent upon two factors: (1) the concentration of the drug in contact with the organisms; (2) the amount of free peptones and other sulfonamide-inhibiting substances present. The maximal effect is obtained only by proper preparation of the wound. Inadequate drainage or failure to debride a wound of all necrotic tissue and pus not only prevents the drug from reaching the wound depth, but also inhibits the drug's action. Adequate debridement usually means surgical excision of all nonviable tissue and thorough irrigation of the wound with large quantities of sterile saline solution. Some merit may be attached to irrigating the wound with hydrogen peroxide, since these substances help to provide an aerobic medium in which the sulfonamides are more effective.

The type of wound to some extent limits the effectiveness of local application. Deep, pocket-

ed wounds and inaccessible walled-off abscesses or drainage fistulas cannot be benefited unless the wound is first converted into an open accessible area by proper surgical drainage. To some extent there may be limited diffusion into surrounding tissues following local application of the powdered drug. For this reason sulfanilamide, which is the most diffusible and readily absorbed of the current sulfonamides, is frequently preferred to the other drugs. Any such diffusion, however, is probably not extensive, for even with local tissue concentration of 800 mg. per cent, systemic concentrations usually do not exceed 2 or 3 mg. per 100 c.c. of blood. Such a high local concentration of any of the known sulfonamides is bacteriostatic for all organisms commonly encountered in wounds. Experiments *in vitro* devised to prove the superiority of one drug over the other are not well adapted to surgical infections, for if an adequate amount is used in a well prepared wound, there is little specificity apparent, and one sulfonamide seems to be as effective as another, regardless of the bacterial flora.

Most pyogenic wounds, if free of debris and adequately drained, become practically sterile after three or four days of powdered sulfanilamide applications. In one reported series of eighty grossly infected surgical wounds, smears and plated cultures were taken before debridement and at frequent intervals during treatment. In practically all cases a mixed flora was found. Some of the wounds, particularly chronically infected ulcerations, contained four or five different types of organisms. To estimate the bacterial growth of these lesions quantitatively, an arbitrary standard was devised. The wounds were each irrigated daily with 100 c.c. of sterile saline solution, and 1 c.c. of these washings was plated on blood agar medium. Following each irrigation sufficient sulfanilamide powder was placed in the wound to cover the entire area. Most of the wounds, if kept free of debris and adequately drained, became practically sterile as estimated by this plating method, after from three to six days. Streptococci and staphylococci were the predominating organisms, with Pseudomonas pyocyaneus and Escherichia coli and diphtheroids present in many wounds. After six days fifty-six of the eighty cases showed very little or no growth, and all of the rest showed a marked diminution in colony counts. In several cases of draining and secondarily infected tuberculous sinuses none of the sulfonamide drugs had any effect in changing or diminishing the secondary infection. The actual choice of sulfonamide drug seems unimportant compared with the necessity for preparing the wound to receive the drug. None of these drugs is an effective antiseptic in the presence of true sepsis.

3. *Wound healing in presence of sulfonamides is still an unsettled subject.* Retarded healing has been reported by several workers. Other surgeons have disclaimed this, observing no delay or weakness in primary union of experimental and clinical wounds and fractures. In order to understand this apparent discrepancy, biopsies in one series were taken from the edges of infected wounds, most of which were undermined infected decubitus ulcers. Biopsies were repeated at frequent intervals during treatment, and several general observations were made. In no instance was there gross or microscopic evidence of sulfanilamide interfering with the normal physiology of healing. There was no evidence that the drug kills off fibroblasts or epithelium. The powder, however, is slowly absorbed, and in fairly clean incised wounds it undoubtedly does prevent early contact of the contiguous wound edges, thus slowing healing. Such wounds, when healed, appear fully as strong as when the drug is not used, and leave just as little scar. Sulfanilamide powder, when freshly applied, is frequently accompanied by increased oozing of small blood vessels; in several herniorrhaphies in which 10 Gm. of the powder was implanted subcutaneously, this oozing was sufficient to form a hematoma and necessitate drainage of the serosanguineous fluid. Because of these various local reactions, more judicious use of the sulfonamides and smaller doses are indicated. Topical application of the drug in any contaminated or infected wound is certainly advantageous and should be followed; its routine use in clean operative wounds in which normal healing is expected is unnecessary and should be discouraged.

4. *It is the case where there is accidentally or transitory contamination of the peritoneal cavity that sulfonamides are most effective.* The literature is full of such reports, but the cases are poorly controlled. Clinically, this is difficult to do, both in a qualitative and quantitative sense. Experimentally, unless the number and type of

organisms are controlled, the results are meaningless. In 1939, the author studied the effect of certain drugs in the prevention of peritonitis in rabbits. Qualitative and quantitative analyses were made of a culture of known virulence. The peritoneal cavity of rabbits were inoculated with this culture and the survival rate noted. If, at the same time, sulfanilamide was placed in the peritoneal cavity, more of the animals lived than if the powder was not used (control). The effect of Coli bactragen, Bargens vaccine, sodium ricinoleate 1 per cent, ether, aqueous mertheolate, etc., were also studied but the sulfonamides were better in preventing peritonitis. If the sulfonamides were used after the peritonitis was well dedeveloped, the survival rate was not materially influenced. Sulfonamides are most effective in the pre-peritonitis stage. When infection is present, their efficiency is greatly reduced. This would be expected as sulfonamides adhered to a protein erudate, as pus, is inactivated. Also, the mechanical walling off as occurs in intraperitoneal infections would limit their efficacy. The author knows of no well-controlled, large series that shows sulfonamides to be of definite value in the treatment of generalized peritonitis of enteric origin.

Summary

The following impressions have been presented concerning the use of sulfonamides in abdominal surgery.

1. There is no indication for the use of sulfonamides in "clean" surgical cases.

2. In infected wounds, sulfonamides are not of much value unless a debridement of one grossly infected tissue is carried out first.

3. Sulfonamides, if dusted lightly into the wound, apparently do not interfere with the normal physiology of wound healing, but they may interfere with wound healing by causing oozing or mechanical separation of tissue edges if too large amounts of the drug are used.

4. Sulfonamides are most effective in the preperitonitis stage. When gross infection is present, their efficacy is much reduced.

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THE USE OF DICUMAROL IN SURGERY

NELSON W. BARKER, M.D.

Rochester, Minnesota

DICUMAROL [3,3'-methylene-bis-(4-hydroxycoumarin)] is a compound found in spoiled sweet clover which has been known to produce a hemorrhagic disease of cattle.[15,16] It was first isolated from spoiled sweet clover and later synthesized by Link and his associates at the University of Wisconsin.[6-9,11,13,17] When dicumarol is administered orally to human beings as well as to animals, the prothrombin content of the blood is reduced as shown by a prolongation of the prothrombin time.[3,5] This is thought to be the result of inhibition of the formation of prothrombin. The only other physiologic effects which have been noted after administration of dicumarol are prolongation of clot retraction time and elevation of the sedimentation rate of the erythrocytes. The coagulation time of the blood is usually prolonged but not necessarily proportionately to the prolongation of prothrombin time.

Because prothrombin is one of the substances concerned in intravascular as well as extravascular coagulation of the blood, dicumarol has

From the Division of Medicine, the Mayo Clinic, Rochester, Minnesota.

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TABLE I. NONFATAL POSTOPERATIVE PULMONARY EMBOLISM AND INFARCTION

	Control group; anticoagulants not administered		Dicumarol administered	
	No.	Per Cent	No.	Per Cent
Total cases	678	100	111	100
Subsequent venous thrombosis, pulmonary embolism or infarction	297	43.8	2	1.8
Subsequent fatal pulmonary embolism	124	18.3	0	0

TABLE II. POSTOPERATIVE THROMBOPHLEBITIS

	Control group; anticoagulants not administered		Dicumarol administered	
	No.	Per Cent	No.	Per Cent
Total cases	897	100	83	100
Subsequent episode of thrombophlebitis	95	10.6	2	2.4
Subsequent fatal pulmonary embolism	51	5.7	0	0

been used in an attempt to prevent postoperative thrombosis and embolism.[1] Some experimental work on animals also indicates that, if the prothrombin time is prolonged by dicumarol, intravascular thrombosis is inhibited.[4,10,14]

Dicumarol has been administered to 624 surgical patients at the Mayo Clinic during the immediate postoperative period. One hundred eleven of these patients had had pulmonary embolism or infarction and had survived. In such cases it has been shown[2] that the risk of further thrombosis with or without embolism is high (43.8 per cent) and that the risk of a subsequent fatal embolism is 18.3 per cent. In only two of the 111 cases did we encounter any subsequent thrombosis and in both of these instances the prothrombin time was probably not adequately elevated. No fatal embolism was encountered in the group of cases in which dicumarol was administered (Table I).

Dicumarol was given to eighty-three patients who had postoperative thrombophlebitis. The expected statistical incidence of further thrombosis and embolism in this group of patients was 31 per cent and the expected incidence of fatal embolism was 5.7 per cent.[2] Further thrombophlebitis developed in only two of the cases in this group while the prothrombin times were elevated and embolism did not develop in any of the cases (Table II).

A third group of thirty patients who received dicumarol had had thrombophlebitis or pulmonary embolism following a previous operation or from any cause during the year prior to the immediate operation. Thrombosis or embolism did not develop in any of these thirty cases. Accurate statistics showing the risk of thrombosis and embolism in this group of cases are not available but such data as are available indicate that there is about a 40 per cent risk of some thrombosis or embolism and about a 10 per cent risk of fatal embolism.

A fourth group consisted of 259 patients who had undergone abdominal hysterectomy. In this group, dicumarol was given purely for prophylactic purposes since none of these patients had had evidence of thrombosis or embolism previously. The expected incidence of thrombosis and embolism in this group of patients was 4 per cent, of fatal embolism 0.7 per cent.[2] Thrombosis or embolism did not develop in any of these cases.

A fifth group of 141 patients who had undergone various other types of operations and who, because of obesity, varicose veins, anemia, heart disease, or because of unavoidable trauma to veins at the time of operation were felt to be increased risk for postoperative thrombosis and embolism also received dicumarol for prophylactic purposes. In none of these cases did postoperative thrombosis or embolism develop.

These experiences indicate that adequate elevation of prothrombin time by the administration of dicumarol is almost completely effective in the prevention of postoperative thrombosis and pulmonary embolism. It also supports the concept that embolism only develops when the thrombus is of very recent origin and that, therefore, embolism can be prevented in cases of known thrombophlebitis or venous thrombosis if sudden extension of thrombosis or thrombosis in other veins is prevented. There is no evidence to indicate that dicumarol has any effect on thrombosis or embolism that has already occurred.

The only untoward effect of dicumarol is that

TABLE III. INCIDENCE OF BLEEDING AMONG PATIENTS TREATED POSTOPERATIVELY WITH DICUMAROL

Reasons for dicumarol therapy	Total patients treated	Minor bleeding		Major bleeding. Transfusion required	
		No.	Per Cent of Total	No.	Per Cent of Total
Postoperative pulmonary embolism	111	5	4.5	2	1.8
Postoperative thrombophlebitis	83	3	3.6	1	1.2
Thrombosis or embolism after previous operation or within one year prior to immediate operation—prophylaxis	30	1	3.3	1	3.3
Abdominal hysterectomy—prophylaxis	259	17	6.6	8	3.1
Other operation—prophylaxis	141	7	5.0	8	5.7
Total	624	33	5.3	20	3.2

it occasionally causes bleeding. This bleeding may occur at the operative site, from the nose, or from the urinary tract. If bleeding occurs, it can almost always be controlled by the transfusion of freshly drawn citrated blood; occasionally more than one transfusion is necessary. Vitamin K is usually not effective in lowering the prothrombin time which has been elevated by administration of dicumarol and does not inhibit the effect of dicumarol. Minor bleeding occurred in 5.3 per cent of our 624 cases (Table III). This was of only slight degree and did not require transfusion. Major bleeding requiring transfusion occurred in 3.2 per cent of the cases. It occurred less frequently in cases of thrombosis or embolism than in the group in which dicumarol was given purely for prophylaxis. Only one death from hemorrhage occurred in the entire group and in this case it is unlikely that the dicumarol was a factor since the prothrombin time was only slightly elevated when the hemorrhage occurred.

Although dicumarol is easily administered by mouth it is necessary to individualize the dose carefully for each patient in order to produce an adequate but not excessive effect. Absorption of the drug from the intestinal tract probably varies in different cases and there is some evidence that the effect may vary with the weight of the patient but there are other differences in sensitiveness to the drug which are not dependent on absorption or body weight. The dose should be guided by the effect on the prothrombin time. At the Clinic we use Magath's modification of the Quick method,[12] which in our experience allows accurate and consistent determinations. The test is done daily in all cases in which dicumarol is being administered. Normal prothrombin times with this test are from eighteen to twenty-two seconds. Experience has shown that thrombosis is very rare if the prothrombin time is greater than twenty-seven seconds and that major bleeding is very rare if it is less than sixty seconds; therefore it is desirable to keep the prothrombin time (measured by the above method) between twenty-seven and sixty seconds during the period of administration of the drug.

The plan of administration of dicumarol in the 624 cases mentioned in this paper was as follows: The drug was dispensed in capsules, each containing 100 mg.* In the cases in which pulmonary embolism or thrombophlebitis had developed, 300 mg. were given as soon as the diagnosis was made. A single dose of 200 mg. was given on the following day and on each succeeding day that the prothrombin time was less than thirty-five seconds (Figs. 1, 2 and 3). No dicumarol was given on days when the prothrombin time was thirty-five seconds or more. Occasional exceptions were made as follows: If the prothrombin time was rising rapidly no dicumarol was given even though the prothrombin time had not quite reached thirty-five seconds, and if the prothrombin time was falling rapidly a dose was given the day when it was still slightly greater than thirty-five seconds. In cases in which the patients were very sensitive to the drug, doses of 100 mg. occasionally were used and in cases in which the patients were very resistant to the drug, doses of 300 mg. occasionally were used. If the drug was administered purely for prophylactic purposes, administration was begun on the third postoperative day. The prothrombin time was kept elevated until the patient became ambulatory and then was allowed to return to normal. In some cases it was kept

*The dicumarol used in this study was supplied by the Abbott Laboratories of North Chicago, Illinois.

elevated for more than two months without evidence of untoward effect on the patient (Fig. 4). It must be emphasized that the effect of administration of dicumarol is not immediate. After administration is begun a period of from twenty-four to seventy-two hours, occasionally longer, elapses before the prothrombin time exceeds thirty-five seconds. Also, the effect persists for from two to ten days after administration of the drug is discontinued. If an immediate anticoagulant effect is desired, it is advisable to begin administration of heparin and dicumarol at the same time. Since heparin does not affect the prothrombin time this can be used as an index of the effect of dicumarol alone and the administration of heparin can be discontinued as soon as the prothrombin time reaches thirty-five seconds.

Absolute contraindications to the use of dicumarol are as follows: (1) subacute bacterial endocarditis, (2) renal insufficiency from any cause, (3) purpura of any type, (4) blood dyscrasia with tendency to bleeding, and (5) existing prothrombin deficiency such as might occur in hepatic disease associated with jaundice and malnutrition.

Relative contraindications to the use of dicumarol are: (1) existence of ulcerative lesions, open wounds and a potentially bleeding surface, (2) necessity for second surgical operation during the next two weeks, (3) vomiting due to gastric or intestinal obstruction, or the use of

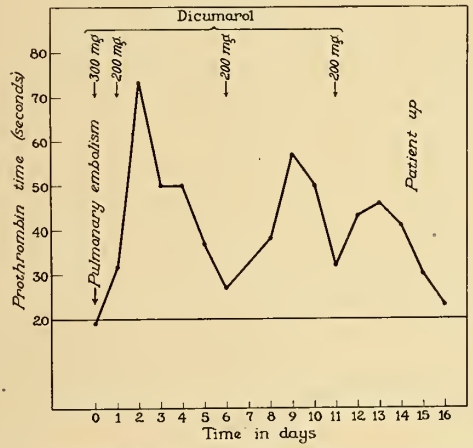


Fig. 1. Strong response to dicumarol in case of pulmonary embolism.

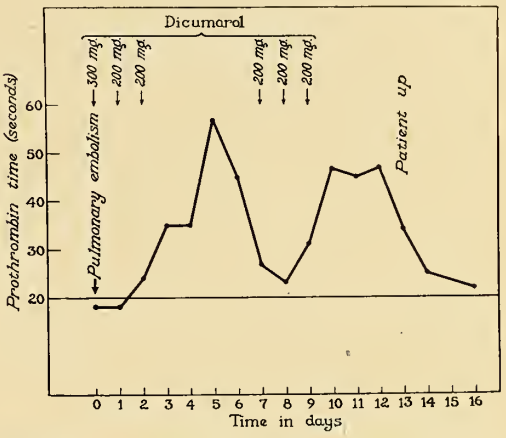


Fig. 2. Slightly delayed response to dicumarol in case of pulmonary embolism.

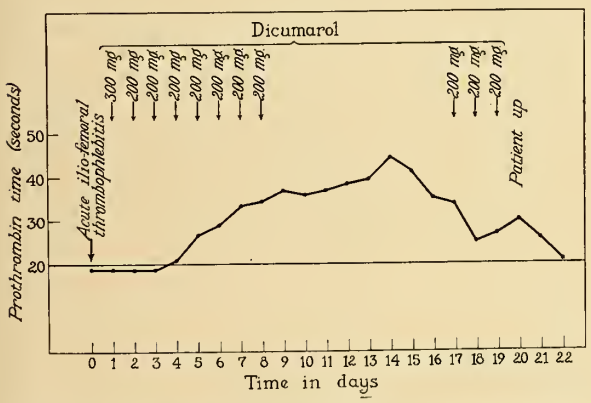


Fig. 3. Slow response to dicumarol in case of thrombophlebitis and considerable resistance to the drug.

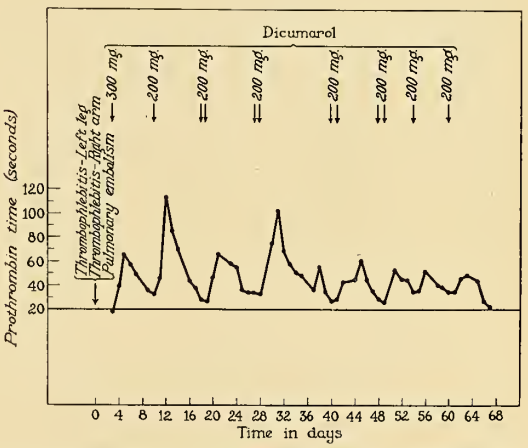


Fig. 4. Response of prothrombin time to administration of dicumarol during a period of two months, showing relatively consistent effect of the drug after repeated doses.

continuous gastric drainage, (4) operations on the brain or spinal cord.

If pulmonary embolism or thrombophlebitis develops in cases in which there are relative contraindications to the administration of dicumarol, it should be recognized that the risk of fatal embolism if no anticoagulant therapy is used may be considerably greater than the risk of bleeding if dicumarol is administered.

Clinical evidence shows that carefully controlled and individualized administration of dicumarol by mouth is effective in the prevention of postoperative venous thrombosis and pulmonary embolism. The drug has no effect on thrombosis or embolism that has already occurred. There is slight risk of bleeding in cases in which dicumarol is being administered but if this occurs it can be controlled by transfusion of freshly drawn citrated blood.

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USE OF BLOOD AND BLOOD SUBSTITUTES IN SURGERY

M. G. GILLESPIE, M.D., and J. E. BLUMGREN, M.D.

THE popularity of blood and blood substitutes has grown rapidly since the onset of the present world conflict. The inadequate and time-consuming factors of whole blood transfusions were discovered during the first World War. These factors have stimulated an extensive literature which is increasing monthly. Therefore, in dealing with this subject and its association with surgery, we make no attempt at a complete review, but shall merely stress a few of the most important practical aspects.

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Many substances which were thought to fulfill the requirements for a blood substitute have been investigated. Acacia[13] was popular for a considerable time. However, in recent years, it has been abandoned because of its harmful effects through plugging the reticuloendothelial system, especially the liver, and the formation of pseudo-agglutination of the red blood cells. Pectin,[6] isinglass[15] (fish gelatin) and many other substances have been used with varying degrees of success. Interest in the albumin fraction of human plasma has recently been aroused by Cohn.[7,8]

Bovine serum and that of other animals has been quite thoroughly investigated. A recent re-

port from the University of Minnesota[10] states that these serums have met the necessary requirements, but reactions are frequent and serum sensitivity may follow. Thus, these substances may not be repeated with safety even though the first exhibition is uneventful.

Amino acids,[1,5] usually in the form of hydrolysed caseins are receiving extensive study. Their reception has been variable, but recent indications seem to be more favorable. Their use in shock is naturally limited, but in the replacement of protein have a very definite place. One must remember, however, that body protein is formed largely in the liver from amino acids. Therefore, in the presence of liver damage, these acids are not utilized properly, and it may be necessary to resort to plasma.

The future holds many secrets and, undoubtedly, the answer to the problem of an ideal blood substitute, but at the present time whole blood, plasma and serum are in the front position. Citrated whole blood is familiar to all. It may be stored under proper refrigeration up to eight or ten days before it becomes unfit for intravenous use. Dilute sugar solutions have been developed which allow storage for a longer period. DeGowin[4] has kept whole blood in such a solution for as long as thirty days. In either case, at any time before the expiration date, the plasma may be drawn off, thereby making blood banking a satisfactory and profitable procedure. Plasma and serum are maintained in liquid, frozen and dried forms. In civilian practice frozen plasma is probably the most satisfactory,[12] but this is not the time to go into a discussion of the various forms, but merely to state that they all have their place.

The importance of blood and blood substitutes in surgery at the present time seem for the most part to evolve about (1) booster transfusions (2) shock and (3) protein balance. The necessity and importance of fluid, electrolytic and carbohydrate balance as maintained by intravenous saline, glucose and other like solutions is common knowledge.

The improvement of the anemic patient following a whole blood transfusion is readily understood. The "booster" effect following a whole blood transfusion is not as easily explained, but everyone is aware of this response in the patient who seems to be lagging for some unknown reason. This response is undoubtedly due to many factors, some of which may be immune bodies as immune transfusions[17] employed in certain conditions give remarkable results and their use is well founded. Whatever the reason may be, "booster" transfusions have a definite place in surgery as well as in the other fields of medicine.

Shock[14] whether primary or secondary, whether from hemorrhage, trauma, burns or toxic, has one feature in common, namely, a decrease in blood volume. It is this reduced volume that needs immediate attention.

If the blood loss has been great, as in external hemorrhage, hemoconcentration is not present, and red blood cells as well as blood volume are needed. However, the immediate use of whole blood is not required as it has been shown[9,11] that the body can tolerate a reduced erythrocyte count for some time, but the reduced volume soon brings on undesirable consequences. Crystaloid solutions will give the necessary volume for a short time but will not maintain the improved level.[11] Ivy, et al.[9] found that crystaloids will bring back the blood pressure and ward off shock, and if followed by plasma or serum, the improved volume can be kept constant. If whole blood is available, it may be used in the place of plasma; if not, use plasma, and after the shock has been overcome, then and only then, is it time to become concerned with the anemia.

Hemoconcentration (as determined by hemoglobin, erythrocyte counts and hematocrit readings) is usually associated with plasma loss and a reduction of plasma proteins. This is the condition in burns, and if not corrected soon becomes irreversible and leads to death. Here, as mentioned before, crystaloids alone will not produce a satisfactory result.

More often they aggravate the condition[11] by producing an increase of capillary permeability and more plasma loss. Plasma or serum in sufficient quantities will cause a reversal of this process and establish a normal state. Whole blood will also do this, but red cells have not been lost, are therefore not needed and may produce ill effects by encouraging stasis in areas of the body with sluggish blood flow.

The prevention of shock when possible is the best treatment. Therefore, it is better to anticipate obvious shock and give adequate amounts

of a blood substitute before the condition becomes too apparent. This procedure in surgery will reduce surgical shock to a minimum.

Whipple has recently stated[3] "—plasma protein takes an active part in the internal protein metabolism of the body—serves to supply all the protein requirements of the body." This certainly makes plasma proteins an important body constituent. Casten, et al.,[2] associates the results of protein deficiency in surgery with peripheral edema, visceral edema, inhibition of gastro-intestinal activity and the inhibition of wound healing. Many of these points are not well appreciated by many physicians and are listed here as reminders.

Wangensteen[16] has dealt with plasma proteins under the heading of "nitrogen balance" and by the judicious use of blood and its substitutes in conjunction with a strict hospital regime has accomplished almost unbelievable results. With the evidence that protein particularly is lacking and the fact that certain animo acids have a great lypotrophic effect on the liver, Casten, et al.[17] have treated what they call "liver weaklings" with plasma and amino acids, thereby reducing postoperative hypoproteinemia in many of their patients. There are many instances [1,5,6,7] in which plasma or serum has returned plasma proteins to approximately normal levels when all other methods have failed. Amino acids have been referred to in connection with plasma protein restoration. Plasma proteins are most important in osmotic physiological interchange. They can be restored when lost by adequate intravenous therapy when other efforts have been ineffective.

Sufficient dosage of blood or serum is all-important. The following examples will illustrate the advantage of sustained intravenous blood restoratives given until the purpose desired is attained. A forty-four-year-old woman recently presented herself to Dr. W. G. Strobel complaining of severe, constant vaginal bleeding of three months' duration. The bleeding had been so severe, that she became very weak spending most of her time in bed. Examination disclosed a small pedunculated fibroid presenting at the cervical os; a red blood count of 1,800,000 and a hemoglobin of less than 10 per cent. In preparation for surgery she received 3,000 c.c. of whole blood in a period of four days. Two days after the last transfusion she went to surgery with a hemoglobin of 89 per cent and a red blood count of 5,500,000. The operation proved to be quite simple and she was able to leave the hospital a few days later. At that time her hemoglobin read 89 per cent and the red blood count was 4,710,000. A simple condition had become very serious, but adequate and proper therapy had returned a semi-invalid to a normal healthy citizen.

The second example is a patient of Dr. W. C. Martin. This twenty-two-year-old woman, while building a fire with kerosene suffered second and third degree burns about her face, chest, arms, hands, and thighs. She received emergency treatment from her family physician and was then transported by automobile some 125 miles to Duluth. On arrival she was chilled, nauseated, vomiting and in considerable pain. Blood studies revealed a hemoglobin of 135 per cent, a red blood count of 7,740,000 and a total blood protein of 4.6 per cent. A hematocrit reading of 54 volumes per cent was obtained two days later at which time her hemoglobin read 109 per cent. The first seventy-two hours she received 2,750 c.c. of undiluted plasma, and approximately the same amount of glucose in distilled water. Glucose in distilled water was used to avoid threatening shock. This point has been stressed in our discussion of shock. This intravenous therapy relieved the nausea and vomiting and reduced the hemoglobin to 92 per cent and the hematocrit to 44 volumes per cent. The total proteins had risen to 5.5 per cent and gradually increased without further plasma infusion to 6.6 per cent. Her course has been very satisfactory and she will soon leave the hospital. As in the previous case, the dosage was not taken for granted, but was based on facts determined by the general condition of the patient and variation of the known blood normals. One cannot give 500 c.c. or even 1,000 c.c. of blood or plasma and expect satisfactory results in all cases. Give until the desired results are obtained. Blood and blood substitutes are not cure-alls, but when properly used, they have no equal.

In conclusion, we have not covered all phases of this broad field, but have tried to point out some of the important aspects of blood and blood substitutes in connection with medicine and surgery. Their value as booster transfusions and in the treatment of shock and hypoproteinemia has been stressed. The question of dosage has been

illustrated by two cases, and the importance of giving blood restoratives in sufficient quantities to bring about the desired result and the using of available laboratory methods as a guide has been emphasized. The popularity of blood and blood substitutes has brought about many abuses in their use, but in spite of these, plasma, serum and whole blood are today proving their worth with the armed forces and on the home front.

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DUHRSSEN'S INCISIONS

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DYSTOCIA during labor may be translated as difficult or abnormal labor, in contrast to entosia or normal labor. DeLee maintained that labor cannot be called a normal function; that bodily damage of some degree always attends it even though this may be nothing more than the invariable pelvic floor injury.

Dystocia may arise from maternal or from fetal causes or from both combined. The maternal causes, in general, are: (1) anomalies of the uterine contractile forces; (2) developmental anomalies and gynecologic abnormalities, and (3) contraction or maldevelopment of the bony pelvis.

In this paper I am interested in only the dystocia from a cervical complication seen sometimes in elderly primipera.

This particular type of cervix is the long rigid cervix known as conglutinatio orificii externi. Titus[1] describes this as follows: "In this condition seen in primiparous women and often repeated in subsequent deliveries, the cervical canal is obliterated, the head is advanced well down into the pelvic cavity, the overlying cap is thinned out but the external os fails to dilate. Labor continues hour upon hour but after thirty-six or forty-eight hours there may be but 2 or 3 cm. dilatation."

The treatment of choice is cesarean section, but after labor has progressed many hours, the time has passed to safely perform this operation. Treatment then resolves itself into multiple incisions of the cervix described by Dührssen in 1890. He utilized the principle that multiple shallow incisions in the partly dilated cervix would afford room for the passage of the infant without dangerous lacerative extension of these incisions.

Four prerequisites are necessary to justify this procedure.

1. The patient must be in a hospital.
2. The cervix must be completely effaced.
3. There must be at least 4 centimeters dilatation of the uterine cervix.
4. There must be indication that many more hours of labor would be required before dilatation would be complete, and that fetal injury or death would follow if labor continued until dilatation was completed by uterine contractions.

The incisions should be so placed that laceration, if it occurs, could not readily extend into

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the uterine arteries. Consequently, lateral incisions must not be made. The proper compass points for these incisions are northwest, northeast, and south, or at 10, 2, and 6 of the clock. These may be made, if preferred, at 12, 4, and 8 of the clock.

It should be reiterated that these incisions are valueless and dangerous unless the patient is so advanced in labor that the internal os is completely dilated, the cervical canal effaced, and the external os at least 4 cm. dilated.

I have altered this technique in that the posterior incision is omitted. Incisions at 10 and 2 of the clock are all that is necessary in the great majority of cases. These two must be sufficiently deep to permit free passage of the fetal head. After the incisions are made labor is permitted to progress, and the patient is encouraged to bear down. After a few pains the presenting part is forced into the pelvis and forceps can be easily applied and delivery completed. Some state that suturing the cut edges is not necessary, but to insure hemostasis sutures should be placed at the upper angle of each incision, and interrupted sutures placed along each incision to the external os. To prevent postpartum bleeding from a poorly contractive lower uterine segment it is safer to pack the uterus with two-inch gauze leaving this in place twenty-four to thirty-six hours.

Summary

Dystocia may develop from a nondilatable cervix.

Treatment early is by cesarean section.

Late in labor cervical incision, as described by Dührssen, is the treatment of choice in selected cases.

The incisions should be sutured after delivery to insure hemostasis.

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THE MANAGEMENT OF COMPOUND HAND INJURIES

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THE hand, being the greatest organ of service to the brain or control station, is by the same token the most vulnerable. Major consideration must be given to its treatment and one must have a first-hand knowledge of the anatomy, physiology and composite function of the integral parts of this highly useful appendage.

While the majority of wounds to the hands occur among those employed in ordinary or skilled labor, no small percentage results from accidents about the home and farm. That this latter etiology is of no small import is shown by the number of Minnesota men rejected by Selective Service or given limited service because of disabilities which are the direct result of injuries from machinery and implements on Minnesota farms. The Minnesota Safety Council, with its excellent leadership, has recently stressed accident prevention about the Minnesota farms and homes and as a result of its efforts, there has been a definite decrease of hand injuries through this cause. Other sources are automobile accidents and sports.

Probably the most important single step essential to the successful treatment of severe compound hand injuries and one which supersedes all other details in importance is thorough gentle cleansing of the wound and surrounding area with mild soap and water, by or under the direction of the responsible physician, properly scrubbed and masked. Omission of this procedure may be followed by unsatisfactory or compromising results regardless of the excellence of tissue approximation.

Obviously, wounds of minor extent do not need an elaborate setup. However, they do deserve the thorough cleansing, protection by a face mask of those about the wound, and clean hands and gloves by the physician repairing the wound.

When first seen in the office or emergency room, the wound is rapidly appraised. If it is minor in nature, involving only the matter of skin sutures, cleansing and suture may be imme-

From the Two Harbors Hospital. Read before the Northern Minnesota Medical Association, Duluth, Minnesota, August 28, 1943.

diately carried out. If one suspects or can see that deeper structures have been penetrated, sulfonamid powder and sterile dressings under slight pressure are applied with a splint if necessary. The patient is made comfortable and given sedation and an x-ray film taken if indicated while preparations are being made for definitive treatment. This definitive treatment, while a minor operation, is one which requires all the precautions and careful technique of a major operation. It is best not attempted except in the operating room.

The first object to be obtained is the creation of a clean wound and this requires proper materials, and plenty of time. Haste is never more poorly repaid than in the repair of hand injuries. Dirt and grease in the skin about the wound may be removed by benzine or ether, preliminary to the use of soap and water. Sterile white liquid soap, water, and sterile cotton balls are used for the cleansing, followed by saline irrigation. The careful and methodical washing of the wound takes minutes which to the observer and assistants may seem a sacrifice of valuable time. However, the time is not wasted for, in addition to the initial objective and necessity of obtaining a clean wound, the time may be advantageously utilized in a more thorough contemplation of the wound and observance of the minor details and extensions and depths that might otherwise be overlooked. Time for sterilization of any additional instrument or material is available and an opportunity for the mental formulation of a logical method of repair is presented. The confidence of the patient is enhanced by the careful attention given him and his wounds.

In the technique of cleaning the wound, a gauze dressing or light pack is held on the wound as the surrounding area is washed. This may be done by an assistant and when completed, the wound may be draped and the surgeon cleanse the wound itself, devoting assiduous attention to the wound, gently removing clots and debris with instruments, then minutely inspecting and cleansing the wound surfaces, pockets and crevices, retracting severed structures. Irrigation with saline is used freely during the process and when washing with soap and water is completed. From ten to twenty minutes is necessary to adequately clean a wound, depending on the nature, extent, gross contamination and length of time elapsed since injury.

The procedures of wound excision and wound debridement are seldom necessary or advisable in the usual hand wounds and may be confined in the majority of instances to excision of tags. If necessary, debridement should be done before the process of wound cleansing is entirely completed.

In dealing with hand injuries, one must constantly bear in mind the frequency with which the hands harbor pathogenic bacteria, particularly the hands of the industrial worker. Minor infected abrasions, dermatitis, mild furunculosis are frequently seen. Consequently, these hands particularly need enthusiastic washing of the surrounding area.

The importance of obtaining a clean wound lies in the fact that it is essential in order to obtain primary healing. Unless one is reasonably certain that primary healing will result, the immediate repair of severed tendons and nerves is not justified. Gross infection of a wound involving sutured tendons or a sutured nerve is disastrous.

The standards of technique, hemostasis and care of suturing must be revised upward in dealing with the hand. Every safeguard must be exercised to prevent any possible fibrosis, such as the control of minute hemorrhage. In ligation, only the vessel itself must be ligated and no necrotic or strangulated tissue bits should remain. The suture of tissues must be painstaking so that union will leave the absolute minimum of scar. The dressing following the repair must have sufficient pressure to reduce lymph stasis and maintain an even, constant pressure.

In a short discussion, all phases in the definitive treatment of compound hand injuries cannot be adequately covered. Therefore, only two types of injuries will be considered in detail: tendon division and finger amputation, because of their common occurrence.

Tendon Division

Division of a tendon or tendons is a common feature of hand and finger lacerations and deserves careful attention because of its great economic importance and possible later functional impairment of hand usage. Tendon sutures require operating room attention.

1. Flexor tendons are commonly divided in the flexor sheaths and in the wrist. When divided in the flexor or fibro-osseous sheath, they need special attention because of the limited space available in the sheath.

The presence of the sublimis and profundus

flexor tendons in the flexor tendon sheath creates a problem not found elsewhere in tendon suture. If both tendons are severed, there will be insufficient room in the sheath for two repaired tendons. The result, if attempted, will usually result in failure. One method of overcoming this complication is to sever the sublimis tendon as high and low as it can be reached, repairing the profundus.



Figs. 1 and 2. A laceration of the wrist severing 6 flexor tendons and the median nerve. There is no evidence of small muscle atrophy and after eight months, normal sensation has returned.

Frequently, in tendon suture, it is necessary to enlarge the incision in one or both directions and this is done by making incisions parallel with, and not across, flexor creases; and in the fingers, on the lateral margin of the phalanges, never across a joint.

To function, a tendon must glide. Without this ability, it is useless and to preserve this all-important characteristic, a gliding surface must be fostered in the repair. A tendon is essentially an isolationist for it cannot be united to everything in the neighborhood and be anything except a functional failure.

Divided flexor tendons in the palm below the flexor sheaths are more difficult to expose, but usually better results are obtained because of the elasticity of the surrounding tissues. In the palm, the digital nerves are usually injured with the tendon because of their proximity, and these nerves being so small, offer a poor prognosis for recovery.

The wrist is a common spot for tendon severance, but, fortunately, repair of them at this point usually gives good results. When many tendons are cut, a fine knowledge of the anatomy is necessary to correctly unite them. Division of the median nerve is a serious complication and may lead to atrophy of the thenar eminence as well as sensory disturbance to the first three fingers on their useful surfaces, especially the tips. Successful function following suture may result and in one case of complete median nerve division in the group of cases here reported there was complete recovery without atrophy or loss of sensation. Ulnar nerve division, if unsuccessfully repaired, is not as serious a handicap to the hand as median nerve loss.

2. The extensor tendons are less of a problem as to exposure, suture, and possible complications. The results are uniformly better. Since the lumbricals with the interossei muscles can extend the distal two phalanges, one must not overlook extensor tendon division.

Primary tendon suture is not always advisable. Wounds over twelve hours old when seen are seldom good material for tendon or nerve repair. If one cannot expect primary healing, tendon suture must not be done. Wound cleansing, etc., is carried out in an identical manner. The skin may be loosely united, if justifiable, and should primary union occur, secondary tendon suture is done in three weeks. If wound infection occurs, the same number of months should elapse.

Sulfonamid drugs are not used in wounds involving tendon or nerve suture because we learn from the experimental work of Mason and Allen[2] that the hemorrhagic exudate formed about the repaired tendon lessens its strength. Sulfonamid drugs, however, may be used in compound wounds without tendon suture or nerve suture.

Following tendon repair, the wound is always closed without drainage. Splinting is quite important. Plaster of Paris is used in the form of molded splints to obtain rest, so essential to the treatment of all wounds and, particularly, rest of the affected muscles whose tendons are sutured. For flexor tendon injuries, the wrist and metacarpophalangeal joint is maintained in flexion for three to four weeks. Movement of the finger tips can be encouraged after one week and in the second phalanx in two weeks. Early move-

ment in the wrist and metacarpophalangeal joint is not encouraged because the tendon is not healed before three weeks and movement only invites trouble. The most valuable physiotherapeutic measures, following the removal of splints, are the hot water soaks that the patient may use at leisure at his home and a small object such as a rubber ball that he can carry in his hand and squeeze to encourage finger movement and reduce stiffness rapidly.

Amputation

The most frequent catastrophe to befall the hand is finger amputation. It is one of the common emergencies encountered in the physician's office. It is a minor injury from which there is a lifetime handicap of some degree and always a disfigurement.

Because of the importance of the fingers, it is essential to treat these amputations in such a way that the loss already present is not increased either by ill advised removal of more tissue or by subsequent infection and necrosis. Upon the intelligence of the primary treatment depends the final result. As in the case of tendon sutures, these amputations should be performed in an operating room.

Morphine sedation is usually given as soon as possible even though the pain may not be great. In the operating room, the neighboring skin is thoroughly cleansed and procain is infiltrated into the proximal phalanx. The wound is then cleansed and during this process, the method of repair can be formulated. One of four possible procedures is applicable:

1. A free full thickness skin graft may be applied to the amputation stump.
2. The stump may be sutured without further shortening of the finger.
3. The bone or other structures may be shortened to form the classical amputation stump.
4. No suture or repair may be undertaken.

1. Amputation through the finger tip is quite receptive to a free whole thickness skin graft. The donor site may be chosen from the forearm, abdomen, back or thigh. The removal of the graft and the finger repair can be conveniently done with infiltration anesthesia.

Koch[1] has recently summarized well the principles governing the choice of grafts, emphasizing (1) the nutritional requirements of the graft and (2) the surface requirement of the part to be grafted as the two essential factors to consider. Thinner grafts, such as the Thiersch, will always be more successful because they grow readily, requiring less nutrition. However, they do not stand trauma and break down easily. They are not suitable for the hand.

Thicker grafts such as whole free thickness grafts require an excellent nutritional surface and will not "take" unless they have sufficient nutriment. On the other hand, they can stand the trauma and abuse necessary on the hand and finger surfaces. If subcutaneous tissue, as well, is necessary for the repair, a pedunculated type graft would be necessary.

In the application of immediate whole free thickness graft, an important surgical postulate is fulfilled: namely, early closure of the wound. To use this type of graft, the recipient site must have adequate blood supply and it must have sufficient tissue to protect the nerves, tendons, blood vessels and bones.

Several writers have described their success in using immediate thick grafts to hand and finger injuries; particularly amputations. Zadik[3] reports twenty-seven finger tip amputations grafted, ten by flap grafts and seventeen with free thick grafts with the conclusion that flap grafts should be used on the thumb where tendon is exposed or where more than one-third of the terminal phalanx is missing. Free thick grafts may be used in other instances in his experience.

In our own experience, we have found the field of free full thickness graft applicable to the thumb and the majority of terminal phalanx amputations. Especially receptive to these grafts are those amputations which are oblique, in which a large portion of the anterior surface of the finger has been removed. If a graft were not used on such a case, considerable shortening would be necessary to obtain wound closure.

In performing the graft, a piece the size and shape of the defect is removed by sharp scalpel dissection, leaving the under surface absolutely free of fat. It is sutured in place with interrupted fine dermal sutures under slight but definite tension. A pressure dressing is applied and not changed for ten days. Occasionally, the outer bandage is changed.

2. The second method of treating amputation stumps is by wound closure without shortening of the remainder of the finger. Many amputations

which, on first appearance, seem to need considerable shortening, can on careful planning and use of existing remaining soft tissue and skin be closed with a satisfactory result and no shortening.

3. The classical finger amputation, with its neat, rounded, well padded stump with suture line posterior, away from the pressure-bearing area, is too well known to amplify. It is the standard toward which one must strive, but without unwarranted sacrifice of finger length.

4. The fourth possibility of treating finger tip amputations is by cleansing and sterile dressings. They require from five to ten weeks to heal spontaneously, but the final results are satisfactory. This method was, and still is, the proper one if free thick graft is not applied for any reason. There is no needless sacrifice of finger length.

Automobile door amputations are frequently of the type which may be treated by this latter method, particularly in children.

The last 400 consecutive hand injuries treated by the author previous to June 1, 1943, were analyzed.

HAND INJURIES		*Cases*
Severe injuries		108
Skin, fascia or muscle		56
Tendons severed	(28 tendons)	12
Compound fractures		10
Compound dislocation		1
Amputations	(38 amputations)	31
Medium nerve division	(counted with tendon cases)	1

Of the more severe skin and superficial tissue lacerations, the fingers and hands were approximately equally divided between the right and left hands. Tendon injuries were equally divided between flexors and extensors. Compound fractures favor in frequency neither hand or any finger particularly. Amputations happened oftener on the left hand by three to two. Two-thirds of the amputations occurred in the index and middle fingers, the index finger in our series being slightly more frequently involved. Almost one-half of all finger amputations occurred in the left index and middle fingers. The other three fingers were about equally involved, the thumb slightly oftener than the fourth and fifth fingers.

Summary

1. Hand injuries constitute a large percentage of industrial, farm and home accidents and all possible means should be utilized to prevent these disabling wounds through safety reminders and instructions.

At the present time, conversion of a contaminated wound to a clean wound by complete cleansing with mild soap, water and saline is the simplest method to insure primary healing.

3. Tendon injuries require thorough anatomical knowledge in their diagnosis and treatment, those occurring in the flexor tendons of the fingers and palm offering the greatest problem for obtaining a successful end-result.

4. Major nerve division requires great care in wound treatment and nerve suture. Complete recovery may follow suture of a median nerve severance and one such case is reported.

5. Whole thickness skin graft should be used more often in treating finger amputations as a means of preserving finger length and function.

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INDUSTRIAL INJURIES CAUSE GREAT LOSSES IN MANPOWER

Losses in manpower because of industrial injuries are higher now than they have been for many years, Max D. Kossoris, chief of the Industrial Hazards Division of the Bureau of Labor Statistics, stated at the National Safety Congress in Chicago.

"Considering the trends during the last two years, the further drafting of men out of our industries, and the expected growth in our industrial employment, the trend of injuries can be expected to continue upwards," Mr. Kossoris predicted.

During the last few years, total work injuries have increased more rapidly than employment. Mr. Kossoris said that from 1940 to 1942 average employment increased by 19 per cent, but work injuries rose 23 per cent.

The combination of "green" personnel, congestion and less adequate supervision increases the problem which safety engineers must handle.—*Science News Letter,* January 8, 1944.

INVOLVEMENT OF THE HEART IN TULAREMIA

Report of Two Cases

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PATHOLOGICAL and clinical reports of tularemic cardiac involvement are infrequent. However, a review of the literature reveals reports of pericarditis due to B. tularense. Coronary artery changes are suggested by other observations. Myocarditis is proved by microscopic studies. One report suggests the possibility of endocarditis due to B. tularense infection. A review of the literature and two additional cases of tularemic pericarditis are presented.

Pericarditis

In a disease in which pleuro-pulmonary inflammation is relatively common, one should expect to encounter pericarditis quite frequently. However, in reviewing case reports of pleuro-pulmonary tularemia, one is struck by the infrequency of any mention of findings suggestive of this condition. In a recent article Jager and Ransmeier[4] report a case of constrictive pericarditis due to tularemia. In the literature and from unpublished reports they were able to find only nine other cases in which tularemic pericarditis was present. Of those reported, six survived and of these one developed signs of constrictive pericarditis. The two patients reported below recovered completely, thus making the incidence of constrictive pericarditis in cases reported to date, one in eight (12.5 per cent). Further observations may reveal that tularemia is an important factor in the causation of constrictive pericarditis.

Coronary Disease

Foshay[2,3] has called attention to the development of angina pectoris after recovery from tularemia in patients who previously were free of cardiac complaints. He has cited several cases of sudden death, suggestive of coronary occlusion, in patients who had no previous symptoms of coronary disease. The possibility of endothelial proliferation in the coronary arteries, in addition to the added burden on the heart due to the infectious process, is suggested by Foshay as the explanation for these developments. Kitzmiller[5] reported a case of tularemia in a man thirty-six years of age, who died suddenly of coronary occlusion when he was apparently recovering from a tularemic infection. Death occurred on the twenty-eighth day of the illness. Necropsy revealed extensive atheromatous plaques and partial occlusion of the smaller branches of the coronary arteries. A large healed infarct and a fresh hemorrhagic infarct with necrosis were found in the left ventricle. Almost all the coronary arteries showed intimal thickening, and hyalinized connective tissue in the media and adventitia layers. A small fibrinous thrombus was found in one sclerotic artery. Obviously, all these changes could not be related to the acute infectious process, but it is possible that acute changes superimposed on the pre-existing vascular disease contributed to the death of the patient.

Myocardium

There are many reports of myocardial changes due to tularemia. The reader is referred to Saphir's recent review of myocarditis for a summary of the subject.[6] The most frequent findings include cloudy swelling, and flabbiness on gross examination. Microscopic examination reveals loss of striations, fragmentation of the muscle fibers, infiltrations of round cells about the vessels and between the muscle bundles. Such changes certainly could be expected to reduce the efficiency of an already damaged heart and increase the seriousness of the disease in patients so afflicted, as has been pointed out by Foshay.[2]

Endocardium

There are no definite cases of endocardial involvement due to B. tularense recorded in the literature. However, Sugden[7] reported a case of ulcero-glandular tularemia in which the heart was said to be normal prior to the onset of the disease. During the course of the illness cardiac enlargement and aortic and mitral systolic and diastolic murmurs were observed. These findings together with findings characteristic of congestive heart failure persisted for twenty months. At that time the patient died following a sudden

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attack of abdominal pain. Autopsy revealed an embolus in the mesenteric artery with gangrene of the bowel supplied by the involved artery. The heart was hypertrophied. The mitral valve was fibrotic and showed evidence of healed ulcerated lesions. A few rough vegetative processes were present. The aortic valve showed similar but less marked changes. Stenosis and insufficiency of both valves were present. Unfortunately bacteriologic proof of the presence of B. tularense in the involved valves is not given. However, the evidence is at least suggestive that the tularemic infection may have involved a previously normal heart.

Reports of Cases

Reports are submitted of two cases of tularemic pericarditis.

Case 1.—Reported through the kindness of Ruth E. Boynton, M.D., director, Students Health Service, University of Minnesota.

F. B. a twenty-three-year-old graduate student in the bacteriology department of the University of Minnesota noted malaise, fever, chills, and cough beginning January 27, 1938. He stated that he had been working in the laboratory with B. tularense and that recently an infected rabbit had sneezed in his face.

Physical examination on February 1, 1938, revealed the following significant findings temperature 102°F., pulse 100, respiration 22. Chest: slight decrease of respiratory movement on the left. Normal resonance bilaterally. A few fine crepitant rales were heard in the sixth intercostal space to the left of the sternum. There were no ulcers nor enlarged lymph nodes noted.

Laboratory findings: Urine negative. Hemoglobin 98 per cent. White blood cells numbered 10,300 per cu. mm. with 82 per cent neutrophiles.

Bacteriologic studies: on February 9, 1938, B. tularense were recovered from animals which had been injected with the patients blood. Serum agglutination tests for B. tularense were reported as follows: February 3, 1938, absent; February 8, 1938, positive in titre 1:160; February 11, 1938, positive in titre 1:320. Culture of the pleural fluid revealed B. tularense.

Chest x-ray showed nothing significant on February 1, 1938.

Course: The patient became very toxic; temperature was of the septic type varying from 99 to 104.6° F. The pulse rate varied from 85 to 120. Physical signs suggestive of pneumonia in left lower lobe were noted on February 4, 1938; x-ray of the chest confirmed this. On February 8, 1938, a pleural friction rub was heard in the left axilla and on February 9, 1938, a pericardial friction rub was heard over the apical area of the heart. On February 8, 1938, an electrocardiogram showed sinus tachycardia and slight slurring of QRS complexes. Chest x-ray later showed a massive pleural effusion on the left. Foshay's anti-tularemic serum was given in daily doses of 30 c.c. on February 9, 11, 12, and 13. Symptomatic measures were also employed. The patient very gradually improved; the temperature slowly fell to normal levels. He was ready for discharge on March 27, 1938. He recovered completely and resumed normal activity.

Case 2.—T. B., a thirty-seven-year-old farmer, came to the University of Minnesota Hospitals on April 25, 1942. He stated that in November, 1941, he had become seriously ill following a cold. Cough, fever and pain in the chest were the main complaints. His condition had required hospitalization at the local hospital for six weeks and he was irrational for twenty-five days of his hospital stay. A diagnosis of pneumonia with pleural effusion had been made by the attending physician and fluid had been aspirated from his right pleural cavity on two occasions. Following his discharge from the local hospital in December, 1941, he noted continued weakness and exertional dyspnea; and during February and March of 1942 began to note dependent edema. It was because of these symptoms that he came to the University Hospitals. Inquiry revealed that approximately two weeks before the onset of his illness in November, 1941, he had cleaned two squirrels. No ulcer nor lymphadenopathy had appeared.

Physical examination on April 25, 1942, revealed the following significant findings: Temperature 101 F.; pulse 110; respiration 24. Chest: heart and trachea displaced to the left. Signs of fluid in right pleural cavity, reaching up to level of seventh rib posteriorly. Crepitant rales were heard above this area. A pleural friction rub was heard over the right lung anteriorly. Heart: a soft systolic murmur was heard along the left sternal border in the third and fourth intercostal spaces.

Laboratory studies: Urine, negative; hemoglobin 10.5 Gms. per 100 c.c. of blood; WBC 6,350 per cu. mm.; neutrophiles 72 per cent; lymphocytes 26 per cent; monocytes 2 per cent. Agglutination for B. tularense was positive in a dilution of 1:2560 in the blood; and 1:320 in the pleural fluid. B. tularense was recovered from guinea pigs injected with the pleural fluid. The pleural fluid contained 775 WBC per cu. mm. Of these 97 per cent were lymphocytes. Chest x-ray on April 26, 1942, showed a large pleural effusion on the right with displacement of the heart to the left. A small amount of fluid was noted in the left pleural cavity; an infiltrative process was present in the left upper lung field. An electrocardiogram taken on April 30, 1942, showed a diphasic T wave with cove plane contour in lead 1, flattening of T waves in leads 2 and 3, and a negative T wave in lead 4 F.

On May 7, 1942, a pericardial friction rub was heard along the left sternal border. This increased in intensity for one week and then gradually decreased until it was no longer audible about five weeks later. Temperature gradually returned to normal and the x-ray findings resolved. He was discharged from the hospital on July 2, 1942, and instructed to restrict his activities. When last seen in January, 1944, he stated that he was doing all his own farm work without distress

of any kind. Roentgen kymogram showed no evidence of constrictive pericarditis. The electrocardiogram was entirely normal.

Comment

Tularemic and tuberculous infections have several characteristics in common: Descriptions of pleuro-pulmonary tularemia[1] have pointed out the resemblance of the pulmonary lesions to those of tuberculosis. The long period during which B. tularense may be dormant after apparent clinical recovery has been noted by Foshay.[3] Constrictive pericarditis may be a complication of both diseases. Further observations must be made to determine how often tularemia, especially of the pleuro-pulmonary type, is followed by constrictive pericarditis. It is possible that some of the cases of constrictive pericarditis, in which the etiology has not been established, are due to B. tularense infection.

Summary

1. A brief review of the subject of tularemic cardiac involvement is presented.

2. Two cases of tularemic pericarditis are reported.

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CESAREAN SECTIONS

A Ten-Year Statistical and Comparative Study from the Ancker Hospital*

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THE cesarean operation was originally devised to save lives! Indeed, this is still its purpose, but though great strides have been made in its technical performance, the abuse of this operation stands as the most serious obstacle to improvement in maternal and fetal mortality statistics. These abuses are well known to most of us and the literature is emphatic in their condemnation. All physicians, hospitals, and clinics should therefore take inventory from time to time to see where improvement can be made in their particular cesarean series. The results, good or bad, should be a subject for criticism and scrutiny of the medical groups involved. Thus, many hospitals and clinics have benefited from such an analysis by establishing rigid and strict rules governing the conduct of cesarean cases. This seems to be the first logical step in the eradication of the cesarean problem.

The stimulus for this present ten-year analysis and comparative study arose, peculiarly enough, because of the "lack of cesarean sections" being performed at the Ancker Hospital. In other words, the incidence seemed to be so low in comparison to other clinics and hospitals that some explanation or justification was necessary. At the Ancker Hospital a cesarean section is really considered an "important event." In fact, many interns fail to see one performed while on their six weeks obstetrical service even though approximately 150 mothers are delivered during this interval of time.

In the following report, then, our experience with the cesarean section from 1933 to 1943 is summarized and the American literature for the last five years (1938-1943) reviewed for comparative statistics. A portion of this data overlaps a previous ten-year analysis (1927-1936) prepared and published by A. G. Schulze[23] of the Ancker obstetrical department.

Incidence of Cesarean Section

At the Ancker Hospital there were only forty-five sections performed in ten years from a total of 11,195 deliveries, a numerical incidence of one in 249 or 0.4 per cent. That this low incidence is not merely accidental or coincidental for this particular ten-year period is proved by the fact that

*A charitable institution, the obstetrical service of which is supervised by obstetrical specialists practicing in Saint Paul, Minnesota.

TABLE I

Hospitals	Sections	Incidence (Percentage)	Incidence (Numerical)	Maternal Mortality (Percentage)	Fetal Mortality (Percentage)	Maternal Morbidity (Percentage)
Ancker	45	0.4	1 in 249	4.4	8.8	35.5
Morrisania	—	0.8	1 in 129	10.7	—	—
Sedgwick County	—	1.6	1 in 63	4.7	8.9	25.0
St. Louis Maternity	—	1.8	1 in 56	2.96	8.2	—
Mount Vernon (1930-35)	—	2.1	1 in 48	10.5	—	—
Community (1935-40)	—	3.1	1 in 32	3.7	—	—
New York City Hospitals	—	2.4	1 in 42	2.7	—	—
New York Infirmary for Women and Children	—	2.4	1 in 42	2.6	11.7	—
Harper Hospital	338	2.5	1 in 40	2.36	8.5	—
New Jersey (1939)	—	2.6	1 in 38	3.0	—	—
Hospitals (1940)	—	2.7	1 in 38	2.7	—	—
National Report	—	3.2	1 in 32	4.69	—	—
Massachusetts Hospitals	4,298	3.4	1 in 29	—	8.8	—
Methodist Hospital of Brooklyn	1,066	3.9	1 in 26	3.18	5.2	50.0
Evanston Hospital	340	4.05	1 in 24	0.88	9.7	—
Elizabeth Steel Magee Hospital	1,322	5.23	1 in 19	3.02	8.0	—
Chicago Lying-In	1,000	5.5	1 in 18	0.80	—	43.8
Johns Hopkins	1,333	5.2 (W)	1 in 19 (W)	2.80	—	—
	—	5.9 (N)	1 in 16 (N)	2.80	—	—
Cedars of Lebanon	507	8.35	1 in 12	1.57	5.8	29.0 (Cl)
	—	—	—	—	—	36.7 (Ce)
Iowa Statistics (1930-32)	—	—	—	7.0	16.4	—
(1933-35)	—	—	—	5.4	12.1	—
University of Minnesota Hospitals	72	—	—	2.7	—	—

it was only 0.31 per cent for the 1927-1936 period. No reports in the American literature of the past five years have a comparably low incidence. Thus, the range was 0.8 per cent at the Morrisania City Hospital in the City of New York to 8.35 per cent at the Cedars of Lebanon Hospital in Los Angeles, or two to twenty-one times the Ancker incidence. This difference becomes more evident when one realizes that a cesarean section is performed once every twelve deliveries at the Cedars of Lebanon hospital while at the Ancker only once in 249 deliveries. To explain this extreme variation certain factors must be considered. Obviously the difference cannot be entirely explained on the basis of racial and individual characteristics. Thus, the incidence in other Saint Paul and Minneapolis hospitals is considerably higher than the Ancker indicating that perhaps some other factors are responsible. Certainly, it is illogical to believe that nature is so imperfect as to necessitate an abdominal delivery in one out of every twelve mothers! However, in studying the incidence chart below, it is obvious that man has found it necessary to intervene in an alarming number of cases.

Table I, made up from the statistics of numerous hospitals throughout the United States, includes the incidence of cesarean sections, the fetal and maternal mortality, and the maternal morbidity when given.

Maternal Mortality

If one analyzes Table I it becomes obvious that the cesarean operation is attended with considerable risk to the mother. For instance, an incidence of 8.35 per cent and a maternal mortality of 1.57 per cent as reported by the Cedars of Lebanon Hospital means that out of every 200 sections three mothers are lost or approximately five times the expected mortality rate of spontaneous deliveries. If, then, the high mortality rates of some clinics exist, the risk becomes even more obvious. Thus, a national survey listed the mortality rate of 4.69 per cent. For comparison and emphasis the following observations are interesting. If, for instance, a comparison is made between the Morrisania hospital with its 0.8 per cent incidence and 10.7 per cent mortality and the Cedars of Lebanon hospital with its 8.35 per cent incidence and 1.57 per cent mortality, one and a half more maternal deaths occur at the latter hospital from cesarean sections in spite of its low mortality rate. If Ancker hospital with its 0.4 per cent incidence and 4.4 per cent mortality is similarly compared with the Cedars of Lebanon hospital, it is interestingly true that seven and a half times more mothers are lost at the latter hospital from cesarean sections. The Chicago Lying-in Hospital reported the lowest cesarean mortality rate in this survey but because of its high incidence of 5.5 per cent or one section in every eighteen deliveries, it loses two and one-half times more mothers from cesarean section than the Ancker. Though many more similar comparisons could be made, almost invariably the hospitals with the lowest cesarean incidence report the lowest total maternal mortality rates over a long period of time.

Seeley,[24] reporting on 338 consecutive cases of cesarean section in Detroit, concluded that this operation in Detroit carried no more than the usual clean surgical case risk. However, this mortality rate is still too high in comparison to the expected mortality of spontaneous deliveries. Arnot[2] says, "it is not fair to a woman to deliver her by an abdominal method which puts four to five times the risk on her life that vaginal delivery does unless there is urgent or good reason for abdominal delivery." The reduction in cesarean mortality to a clean surgical case expectancy is commendable provided the operation is limited to purely surgical indications. In other words, the cesarean operation should not be the panacea for all obstetrical evils and used by the untrained physician as a refuge for his inadequate obstetrical training and judgment.

It seems important in a statistical analysis of this type to consider also the total maternal and fetal mortality in an honest attempt to ascertain whether the hospitals reporting a low cesarean incidence have a correspondingly high general mortality. The question must be answered whether the failure to do a particular section caused an increase in the total maternal and fetal mortality. This aspect of the problem is seldom considered in the literature but certainly a hospital with a low section incidence and high general mortality has certain questions to answer. With this in mind the Ancker Hospital records are of interest.

In the ten-year period there were a total of thirty-three deaths on the obstetrical service for an uncorrected maternal mortality of 0.29 per cent or 2.9 per 1,000 deliveries. The main offender was puerperal sepsis with eleven cases or 33.3 per cent. However, five of these cases occurred in 1933 during an epidemic of puerperal sepsis in which many more were infected but recovered. All of these patients died within the period of February 13 to March 16, 1933. Three of these cases showed streptococcus viridans in the peritoneal culture at post mortem. Six other sepsis deaths occurred from 1933 to 1943 but it is an interesting fact that every one of these cases except one (a simple breech extraction) was a spontaneous normal labor and delivery. Postmortem examination of the patient delivering by breech showed a chronic tubo-ovarian abscess from which the sepsis apparently originated. Three other patients died from absolutely unrelated causes. Thus, one died the day following delivery from chronic myelogenous leukemia, one from military tuberculosis forty-six days post partum, and the other from bronchopneumonia and lung abscesses six hours after delivery. There were three pulmonary embolism deaths (two following operative deliveries) and two anesthetic deaths (one from asphyxia and aspiration on the table and the other from bilateral edema and bronchopneumonia one day post partum). The remaining deaths were as follows: eclampsia, four cases; placenta praevia with hemorrhage, two cases; shock and hemorrhage, five cases; cesarean deaths, two cases; and undeterminate causes, one case. This latter case may have been

an amniotic fluid embolism since the patient died a respiratory death on the delivery table without anesthesia. The patients dying from shock and hemorrhage were as follows: one from Duhrssen's incisions and craniotomy on a dead baby; one from atonia following a long second stage terminated by easy low forceps; one from atonia following a normal twin delivery; one from unsuccessful forceps, version and extraction, laceration of the pelvic floor and hematoma of the vulva (delivery had been attempted in the home before arrival at the hospital); and one from cervical and vaginal lacerations and atony following midforceps. It is doubtful whether cesarean section would have been a better procedure in any of the above cases for even in the patient requiring craniotomy the problem was not one of disproportion but of failure of cervical dilatation. The corrected maternal mortality was 0.19 per cent or 1.9 per 1,000 deliveries since the five epidemic sepsis deaths, the unrelated deaths, the two anesthetic deaths, and the undeterminate death can be subtracted.

Analysis of the two cesarean deaths is of interest for several important problems present themselves. One patient was an elderly obese primipara with adequate pelvic measurements but with a large baby. After approximately twelve hours of labor with little or no progress a section was performed. She died on the second postoperative day from an apparent cardiac failure. This case emphasizes beautifully the marked risk of any surgery in an obese individual. The other patient, who had undergone a previous cesarean section, was admitted with an upper respiratory infection in labor. Section was delayed until fifteen hours after rupture of the membranes and then performed under general anesthetic. This patient died on the first postoperative day from pneumonia and peritonitis. Several of the dangers of cesarean section and the errors in handling are emphasized in this second case. First, a low cervical section was performed upon a patient having had vaginal examination and ruptured membranes for fifteen hours. Perhaps an extraperitoneal approach or porro section would have saved this patient. The next danger emphasized is that this patient had to be submitted to another cesarean section in spite of an upper respiratory infection because of a previous section. Even though local anesthesia may have been safer there is still considerable risk in operating on any patient with an infection such as an upper respiratory infection. This particular point is not often considered in the literature but certainly must present a real problem when the cesarean incidence is as high as often reported. Thus, there is most certainly a definite delayed cesarean mortality which must be added to the original mortality rates. The danger of subsequent rupture of the uterus is likewise a real and not infrequent possibility. In our series we encountered one case of ruptured uterus in a patient having had a previous section but fortunately this patient was in the hospital at the time of rupture whereupon immediate operation resulted favorably for the mother. Burkons[3] studied forty-five cases of ruptured uteri and found that eighteen of the forty-five occurred in previous section cases with a 11 per cent maternal mortality and 72 per cent fetal mortality. Falls[9] showed that the outstanding cause of maternal mortality in cesarean section cases was ruptured uterus. Rickards,[21] quoting Eardley Holland, states that 4 per cent cesarean scars give way during subsequent labor or pregnancy.

As to the treatment of the pregnant woman on whom a previous section has been performed there is considerable difference of opinion. Seeley,[24] summariziing 338 consecutive cases of cesarean section at the Harper Hospital in Detroit, believes in the dictum "once a section, always a section." Lazard[15] of the Cedars of Lebanon hospital also follows the above dictum. Certainly, most obstetricians agree that any abdominal pain in the third trimester of pregnancy is a danger signal in a woman previously sectioned. These patients need constant and careful study since not uncommonly rupture of a previous scar will occur long before active labor sets in. Many clinics and authorities, however, follow an attitude of watchful expectancy unless the first section was performed for disproportion. A clean postoperative recovery from the first cesarean section usually, but not conclusively, indicates a good firm scar. At the Ancker hospital we have followed a course of watchful waiting except in cases of obvious disproportion. However, our series is so small as to be indeterminate.

Almost all writers feel that low cervical scar offers greater security against future rupture. Holland, however, as quoted by Rickards,[21] doubts whether this is true. Plass,[20] on the contrary, feels that the low cervical operation gives

much greater guarantee against rupture. It is true, nevertheless, that rupture of the uterus does occur occasionally in the low cervical scar and that this operation cannot be considered an absolute guarantee against this accident.

The one conclusion that can be made is that the fewer sections performed needlessly the less worry one encounters in subsequent labors and deliveries. Thus, Gordan[11] found that out of 110 cases of puerperal deaths in 1939 in the Borough of Brooklyn, twenty-seven were due to cesarean section. Eisaman and Cook[7] state that 13.2 per cent of all the maternal deaths are either attributable to or follow abdominal delivery and that 7 to 10 per cent of all section cases end in tragedy.

Fetal Mortality

The fetal mortality for cesarean sections performed at the Ancker hospital was 8.8 per cent. From Table I it is obvious that this operation offers little as far as fetal salvage is concerned since the mortality in those hospitals reporting ranged from 4.9 to 16.4 per cent. In contrast with these figures the total fetal mortality at the Ancker hospital over the ten-year period, including all viable infants born alive and all stillborn infants, was 29.2 per thousand or 2.92 per cent. If the nonviable fetuses are added to this figure the gross fetal mortality is 44.6 per thousand or 4.46 per cent which is below the lowest mortality given for cesarean section babies. Certainly, in our series, delivery from below, in spite of our extremely low cesarean incidence, did not increase the fetal mortality. Soule[11] states that cephalopelvic disproportion does not occur more frequently today than before and that many cases are being sectioned while previously they were delivered successfully from below.

Great errors are often made in estimating the size of the baby. Thus, Eisaman and Cook[7] state that 33 per cent of all babies delivered by elective cesarean section weighed less than 3000 grams and 10 per cent weighed less than 2500 grams. Soule[26] reports two deaths occurring in elective cases where the babies were too premature to survive. Irving[12] summarizes the problem as follows: "When cesarean section is performed for the sole purpose of obtaining a live infant it does not compete with normal delivery and low forceps for in 12,371 delivered thus through the pelvis the total fetal mortality, including stillbirth and neonatal deaths, was only 3.4 per cent."

Maternal Morbidity

That cesarean section carries with it unavoidable complications is evident from analyzing our small series of forty-five sections. Thus, the following complications occurred coincidently or as a result of cesarean section: severe atelectasis, one case; pneumonia, three cases; acute psychosis, one case thromboplebitis, two cases; urinary tract infection, one case; wound infection, two cases; cardiac failure (fatal), one case; purulent peritonitis (fatal), one case; mastidis, one case; severe anemia, several cases; acute mastoiditis with draining ear, one case; ruptured uterus in subsequent labor, one case; and indeterminate infection in one case. At Ancker hospital the gross morbidity rate was 35.5 per cent with an average postoperative hospital stay of 14.3 days. Ryder[22] reported a puerperal morbidity of 13.5 per cent in elective section cases and 25.5 per cent in those in labor. Arnold[1] found his morbidity to be 11.5 per cent in elective cases compared to 26 per cent in labor cases. He also discovered that the morbidity was 4.8 times as great after the membranes were ruptured as when intact. In 1066 cesarean operations at the Methodist Hospital in Brooklyn, Matthews and Acken[19] report a gross maternal morbidity just over 50 per cent while Daily[5] reported a 43.8 per cent morbidity in 1000 cases at the Chicago Lying-in Hospital. Other morbidity figures are: Sedgwick County in Kansas, 25 per cent; Cedars of Lebanon, 29 per cent for classical and 36.7 per cent for cervical sections; and a national survey with a morbidity of 37.29 per cent. Wound infections alone occurred in 20 per cent of the cases performed at the Morrisania City hospital according to Tamis and Klein.[28] At the Ancker hospital twelve patients were in labor at the time of cesarean section but only four had ruptured membranes. All of these four cases had membranes ruptured less than six hours except one for fifteen hours with a fatal outcome. In comparison to the high morbidity of cesarean cases it is of interest to note that the morbidity in 1007 consecutive cases delivered at the Ancker hospital from July, 1940 to July, 1941 was only 4.75 per cent.

Classical Versus Low Cervical Section

In the ten-year period at Ancker hospital there were thirty classical, thirteen low cervical, and two porro sections performed. No extraperitoneal operations were attempted. The two fatal

cases occurred in the low cervical group but in one case the death was unrelated to the type of section while in the other an extraperitoneal or porro section should have been performed. From our limited experience no definite conclusion can be made as to the best type of cesarean operation. Most writers prefer the low cervical approach using the transverse uterine incision. However, Manahan, Connally, and Eastman[18] believe that prior to onset of labor, classical section will give as good immediate results provided the contra-indications are rigidly observed. Ryder[22] claimed that the maternal mortality was two times as high in low cervical as in the classical operation with a higher morbidity in the former also. He states that the classical operation is easier, quicker, causes less bleeding, and carries less danger to the surrounding tissues. Elston and Elston[8] analyzed 127 consecutive cases in which the classical section was performed with a loss of five mothers. However, only one of these was due to sepsis. They encountered no sequellae such as bladder complications as occur occasionally in the low type of operation. Soule[25] reported a mortality of 2.46 per cent in the classical operation compared to 7.04 per cent in the longitudinal low cervical and 0.0 per cent in the transverse low cervical operation. Cosgrove[4] believes that the cervical operation results in a smoother convalescence and claims there is less danger of rupture of the scar in future pregnancies. Danforth and Burge[6] performed 340 consecutive cervical sections with a mortality on only 0.88 per cent. Jennings[14] stated that the morbidity rate fell in almost direct proportion to the rise in number of low flap operations. At the Ancker hospital the morbidity in low sections was 23 per cent compared to 33.3 per cent in the classical and 100 per cent in the two porro cases. However, if the two patients who died after the cervical operation are added the morbidity is 40 per cent in the cervical operation compared to 33.3 per cent in the classical. In conclusion, then, it may be said that the low cervical operation has received considerable favor in the last few years but that the classical approach in selected cases is probably as advantageous.

Indications for Operation

Ancker hospital seems to be unique in that cephalo-pelvic disproportion is not the main indication for performing cesarean sections. This factor probably explains the low incidence of abdominal deliveries. Thus, disproportion accounted for only eleven cases or 22.2 per cent of all the sections performed. Placenta previa was the indication for section in nineteen cases or 42.1 per cent of which twelve were central or complete and seven partial or marginal. The other indications were as follows: ablatio placenta, five cases or 11.1 per cent; obstructing tumors, three cases or 6.6 per cent; medical reasons, three cases or 6.6 per cent; abnormal presentations, two cases or 4.4 per cent (one a face presentation having had a previous section and one a transverse presentation); carcinoma of the cervix, one case or 2.2 per cent; and fetal distress, one case or 2.2 per cent. Every other hospital in the literature reported disproportion or previous section as the predominant indication for cesarean section. Thus, at Johns Hopkins Hospital 44.8 per cent of all sections are done for disproportion. This indication likewise accounts for cesarean section in 44 per cent of the cases at the small Mt. Vernon Hospital, 47 per cent at the Chicago Lying-in Hospital, 41 per cent at the Morrisania City Hospital, 55 per cent at the Methodist Hospital of Brooklyn, 34.2 per cent at the St. Louis Maternity Hospital, 71.5 per cent at the Elizabeth Steel Magee Hospital, and 75 per cent at the Cedars of Lebanon Hospital. From the foregoing figures on disproportion it would appear that Ancker Hospital should operate more frequently for this indication to stay in line with the other institutions. However, as has been emphasized in this report, the Ancker maternal and fetal mortality and morbidity rates have not been high and we feel that our conservative attitude has instead enhanced our record. We have felt that a test of labor is indicated in cases of questionable disproportion despite severe criticism by some writers and teachers. Thus, McKelvey[16] is emphatic in stating that "test of labor is a dangerous and useless form of clinical guessing and has no more place in clinical obstetrics." Roentgenographic interpretation has, in other words, according to him, been perfected so highly that in each case it can be determined before labor whether delivery will occur spontaneously without damage to mother or infant. That this ideal has not been accomplished at *any* institution is obvious, however, and many good authorities still feel that "clinical judgment" is a valuable possession. Certainly, any pelvic abnormality

requires thorough roentgenographic interpretation but the final evaluation still should depend upon experience and judgement of the clinician. MacKenzie[17] states that special roentgenographic examination is helpful but that it can never replace good, sound clinical judgment. Arnot[2] believes that a test of labor should be given with moderate contraction of the pelvis and states that it is not fair to a woman to place a risk five times as great as a pelvic delivery unless there is an urgent reason for so doing. Danforth and Burge[6] have not found the test of labor to alter the result provided the patient is managed with scrupulous asepsis and they do not hesitate to operate after many hours of labor. Soule[26] considers any operation performed within six hours of the onset of labor as elective. Jackson,[13] on the contrary, feels that the greatest single factor in reducing the dangers of cesarean section is its election before any contra-indications have been permitted to develop and believes there should be fewer tests of labor. Lazard[15] also states that too conservative an attitude results in too late operating with increased mortality in the best of surroundings. Forward[10] gives the following contra-indications to abdominal delivery: (1) if there has been vaginal examinations; (2) ruptured membranes for more than four to six hours; (3) if operative attempts have been made from below. Cosgrove[4] states that favorable elective conditions include: (1) complete lack of contamination; (2) freedom from clinical evidence of infection; (3) duration of labor not in excess of twenty-four hours; and (4) duration of labor not in excess of eight to twelve hours with ruptured membranes.

The fact that our incidence of cesarean section was the highest for placenta praevia (42.1 per cent) does not mean that we are routinely performing sections for this condition. There has been a tendency, however, to perform this operation increasingly more for this complication. Thus, Soule[27] states that generally there is a greater place for section in placenta praevia than was customarily reserved for it. McKelvey,[16] however, states that in placenta praevia with extensive blood loss the shock creates a very poor fetal outlook and that such circumstances are best handled from below irrespective of the type of placenta praevia. Most obstetricians, however, feel that cesarean section is indicated at least in all central or complete types with live babies and that the marginal or partial types can be handled well from below.

Summary and Conclusions

1. The cesarean section incidence at Ancker Hospital for the ten-year period (1933 to 1943) was only 0.4 per cent. The highest incidence reported in this survey is 8.35 per cent.

2. In a five-year review of the literature the maternal mortality of cesarean section cases varied from 0.8 per cent to 10.7 per cent. At Ancker Hospital the mortality was 4.4 per cent.

3. The fetal mortality in section cases varied in the literature from 4.9 to 16.4 per cent. At the Ancker Hospital it was 8.8 per cent.

4. The uncorrected total maternal mortality of all deliveries at the Ancker Hospital was 0.29 per cent or 2.29 per 1,000 deliveries. The corrected mortality was 0.19 per cent or 1.9 per 1000 deliveries.

5. The fetal mortality at Ancker Hospital for all deliveries was 2.92 per cent or 29.2 per 1000 deliveries. This included all viable stillbirths and neonatal deaths. If the nonviable fetuses are added the fetal mortality was 4.46 per cent or 44.6 per 1,000.

6. Cesarean section is accompanied with many complications with the average morbidity somewhere around 35 to 50 per cent. At Ancker it was 35.5 per cent.

7. The gross maternal morbidity for all types of deliveries at Ancker Hospital is somewhere around 5 per cent, being 4.75 per cent in 1,007 deliveries from July, 1940, to July, 1941.

8. The question whether to perform the low or classical section has not been settled. In selected cases the classical seems to be simpler and probably as safe.

9. Cephalo-pelvic disproportion is the predominant indication given for cesarean section throughout the country while at Ancker only 22.2 per cent of all sections were performed because of this complication. Placenta previa accounted for 42.1 per cent of the Ancker cesarean sections. Previous cesarean sections accounted for much of the high incidence reported in this survey.

10. We believe there is a definite place for a "test of labor," for this will eliminate many unnecessary cesarean sections and the risks to the patient they involve.

11. The abuse of the cesarean section stands

as the greatest single factor to be attacked in reducing maternal and fetal mortality statistics.

12. We feel that our conservative attitude in regard to the performance of cesarean section has paid dividends in reducing maternal and fetal mortality rates and in preventing the delayed mortality due to ruptured uteri, intestinal obstruction, and other complications.

NOTE: Since writing this paper, 395 consecutive mothers were delivered at the Ancker Hospital without a cesarean section or maternal death.

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A FIVE-YEAR SURVEY OF CESAREAN SECTIONS IN RAMSEY COUNTY, MINNESOTA

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THIS report presents a statistical analysis of the cesarean sections which have been performed in Ramsey County, Minnesota, during the past five years, 1938 to 1942, inclusive. This has never been done in Minnesota for any unit greater than one hospital. It will enable comparison of incidence, mortality, and indications used in other parts of the country. Perhaps, also, this report with the limitations consequent to the available material will encourage more faithful reports for the hospital records. No attempt will be made herein to identify the ten hospitals of Ramsey County with a particular fraction of the statistics. These hospitals are Bethesda, Midway, Miller, Mounds Park, Northern Pacific, St. John's, St. Joseph's, St. Luke's, West Side General, and Ancker Hospitals.

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TABLE I
(1938-1942, inclusive)

	No.	Per Cent
Hospital Deliveries	28,868	
Hospital Live Births	28,183	97.6
Hospital Stillbirths	693	2.4
Hospital Maternal Deaths	36	0.12
County Live Births	30,943	
County Stillbirths	753	

In this five-year period there were 28,868 deliveries in the hospitals of the county with a maternal mortality of 0.12 per cent and a stillbirth rate of 2.4 per cent. Four hundred and thirty-

TABLE II

	1938	1939	1940	1941	1942	Total	Per Cent
Cesarean sections	64	83	78	91	118	434	
Emergency	12	19	19	17	23	90	21
Elective	50	60	55	71	92	328	76
Not reported	2	4	4	3	3	16	3
Type of operation							
Classical	27	38	18	40	49	172	40
Low	18	21	30	29	33	131	30
Extraperitoneal	3	0	1	1	0	5	1
Porro	16	2	3	1	3	25	6
Not reported	0	22	26	20	33	101	23
In labor	28	28	36	28	35	155	36
Not in labor	32	52	42	59	82	267	62
Not reported	4	3	0	4	1	12	3
In labor							
Membranes ruptured	9	11	13	9	12	54	12
Membranes intact	11	13	19	17	18	78	18
Not reported	8	4	4	2	5	23	5
Anesthetic							
Local	1	1	1	1	4	8	2
General	60	76	71	79	90	376	87
Local and General	3	5	2	9	20	39	9
Spinal	0	1	2	2	4	9	2
Not reported	0	0	2	0	0	2	

four of the deliveries were accomplished by cesarean section, an incidence of 1.5 per cent (Tables I and II). The incidence by hospitals varied from 2.8 to 0.5 per cent. One hospital reporting for 1942 listed more deliveries than the sum of the live and stillbirths. Less than one-fourth of the operations are classified as emergency sections. Few of the records studied stated the type, so "emrgency" section was arbitrarily assigned to those cases in which the operation took place more than six hours following the onset of labor or because of an acute surgical emergency. Hemorrhage, as from placenta previa or premature separation of the placenta, did not constitute such a classification unless of such a degree as to require immediate transfusion and surgery.

The most popular operative procedure is seen to be the classical approach, although the unfortunately high number of unreported cases obviates statistical analysis. The incidence of the Porro type (5.8 per cent) is rather high. It may be noted that three-fifths of the Porro operations were done in the year in which there were the fewest cesarean sections. A 1 per cent incidence of the extraperitoneal procedures is about the same as in the state survey of Massachusetts.[4]

Apparently spinal anesthesia does not find favor here as it was used in approximately 2 per cent of the operations.

TABLE III. INDICATIONS FOR CESAREAN SECTION

	No.	Per Cent
Disproportion	122	28 } 45
Dystocia	73	17 }
Placenta previa	87	20
Central	25	
Partial	31	
Not stated	31	
Toxemia	45	10
Premature separation of placenta	22	5
Previous section	15	3
Obstructing tumor	8	
Associated medical condition	7	
Eclampsia	6	
Malposition of baby	6	
Prematurity and/or large baby	5	
By request or for sterilization	3	
Ruptured uterus	3	
Previous plastic operation	2	
Anomaly vestigial cervix—double uterus	2	
Carcinoma of cervix	1	
Other	25	
Not stated	3	

Thirty-six per cent of the patients were in labor when surgery was performed, but only 12 per cent had ruptured membranes when the section was done.

Table III lists the indications for the cesarean sections in the last five years. Disproportion-dystocia heads the list, as is found in most large series. Those women with disproportion who were given a test of labor have been classified under dystocia. It was noted that in a significant number of charts there was no mention of the usual pelvic measurements, x-ray, consultation, or test of labor. In many cases it is undoubtedly a fact that such points were considered and recorded in the doctor's office or elsewhere, but for the sake of the hospital and the physicians themselves

TABLE IV

	1938	1939	1940	1941	1942	Total	Per Cent
Maternal deaths	0	0	2	2	4	8	1.84
Emergency	0	0	2	0	1	3	38
Elective	0	0	0	2	3	5	63
In labor	0	0	2	0	1	3	38
Not in labor	0	0	0	2	3	5	63
Membranes ruptured	0	0	0	0	0	0	0
Membranes intact	0	0	2	1	3	6	75
Not reported	0	0	0	1	1	2	25

these might be copied on the hospital charts. The varieties of placenta previa are second on the list. Previous section is sixth. This should be qualified by stating that no less than forty-one of the cases listed under disproportion have had one or more previous sections.

In three cases there was a mistake in the pre-operative diagnosis. However, the pre-operative impression is the one used in Table III. The missed diagnoses consisted in mistaking premature separation and submucous fibroma for placenta previa. One case of contracted pelvis was found to have a spondylolisthesis.

No indication or pre-operative diagnosis was stated for three of the sections. However, a forty-five-year-old primipara was one of these.

Some of the miscellaneous indications are worthy of note, e.g., Huntington's chorea, hip ankylosis and spastic paralysis, previous birth of erythroblastotic fetus, previous Manchester operation. One case which has received a good deal of attention is that of a woman who was sectioned after having three spastic babies. The baby by section was normal. One case presented an incarcerated hernia which contained a uterine myoma. Chronic cervicitis, uterine or cervical scarring, previous third degree laceration plus the patient's demand accounted for others. Separation of sacroiliac and symphysis pubis, premature rupture of the membranes, coccygeal neuralgia, and "coincidental appendectomy" were the pre-operative diagnoses of four cases. Most of the remaining indications were multiple, a combination of medical and obstetrical conditions or two or more obstetrical conditions. In these cases no emphasis or choice was recorded to enable classification in Table III.

Eight maternal deaths in this series gives an uncorrected maternal mortality of 1.84 per cent compared with the national rate of 4.69 per cent as compiled from 30 reports.[1] The highest mortality from one hospital in the present series was 15 per cent. The obstetrical conditions prevailing at the time of section of those mothers who died are presented in Table IV. It is interesting to note the low number for those in labor and those with ruptured membranes.

TABLE V. CAUSES OF CESAREAN SECTION DEATHS

Acute cardiac failure	1
Pulmonary emboli	1
Generalized peritonitis	1
Acute pulmonary edema	1
Pneumonia	1
Ascites, paralytic ileus, hydrothorax	1
Pulmonary infarctions, bronchopneumonia	1
Unknown	1
Total	8

Table V lists the causes of death in the fatal cases. Five of the eight showed pulmonary complications of one sort or another. Death from acute cardiac failure followed a sixteen-hour labor in a 218-pound woman in her first pregnancy whose cervix never dilated beyond 2 cm. Acute lung edema was the cause of death twenty-four hours after operation in a woman who had had edema, dyspnea, and orthopnea for two and one-half months. Sterilization had been advised previously. Generalized purulent peritonitis associated with perforation of the uterus were the post-mortem findings on one whose indications were dystocia and face presentation with a 12-hour labor. A woman operated upon for ruptured uterus died on the sixteenth postoperative day of ascites, ileus, and left hydrothorax. The death of uncertain origin was on the fifth postoperative day in a woman who had been in labor six and one-half hours. The indications were prematurely separated placenta, placenta previa, and ruptured uterus. No previa was present at operation. It is interesting to see that one of the smaller hospitals with perhaps a less desirable reputation had a high number of specialist consultations and no section deaths.

Fetal mortality and neonatal deaths are recorded in Table VI. The stillbirth rate is 6.2 per cent. The percentage is 11.2 when neonatal deaths are included.

Table VII enables comparison with a few of the larger series for the past several years. Certain general conclusions may be drawn from this. The incidence of cesarean section in Ramsey County is distinctly below the average. The maternal mortality ranks very favorably among the

TABLE VI

	1938	1939	1940	1941	1942	Total	Per Cent
Cesarean Sections	64	83	78	91	118	434	1.5
Maternal Deaths	0	0	2	2	4	8	1.84
Live Births	62	76	71	84	115	408	92.9
Stillbirths	1	8	8	4	6	27	6.2
Neonatal Deaths	1	7	4	3	7	22	5.0
Not stated	1	0	0	3	0	4	0.9

reports. The fetal mortality in Ramsey County appears high although it is important that our figures are uncorrected and include neonatal deaths as well as stillbirths. In many of the reports listed definition of the figures was not made. Hence, reliable conclusions are not possible. Although comparison of indications is difficult to make, suffice it to say, our figures are similar to those of other parts of the country.

Conclusions

It appears from the incidence, indications, and types of surgical procedures during the five-year period that in Ramsey County the approach to the problem is conservative. The low maternal mortality is praiseworthy. The fetal mortality is perhaps high but comparison is not reliable as our figures are gross uncorrected statistics. The long range viewpoint covering gross mortality and morbidity is the only definite means of determining the relative values of conservative and radical approach, but that is not within the scope of this statistical report. The large number of cases detailed lends significance to the figures and percentages given.

For the benefit of hospital records and comparative statistics it would be helpful if the charts in the private hospitals were more complete.

Summary

A survey of cesarean sections in Ramsey County during the five-year period 1938-42 is presented.

The incidence of section is 1.5 per cent and the maternal mortality is 1.84 per cent, figures which are low when compared with other large series. The total uncorrected fetal mortality is probably a little high.

Classical section under general anesthesia was the method of choice during this period.

TABLE VII

City	No. Sections	Incidence	Mortality	Fetal Mortality
National Survey[1]	15,768 ('31-'39)	2.55%	4.69%	8.88%
Baltimore[5]	750 ('32-'41)	5+	1.7	
Brooklyn[9]	1,066 ('20-'37)	3.9	3.18	5.2
Chicago[3]	1,000 ('31-'38)	5.5	0.8	6.7
Dallas[1]	102 ('31-'39)	1.5	1.96	5.88
Los Angeles[7]	507	8.35	1.57	5.8
Massachusetts[4]	11,030 ('37-'41)	3.3	2.46	8.9
Mt. Vernon, N. Y.[8]	107 ('36-'40)	3.1	3.7	9.0
New Orleans[6]	1,108 ('27-'36)	2.08	5.9	10.8
New York[12]	112 ('29-'37)	0.8	10.7	
Philadelphia[10]	1,322 ('32-'42)	5.8	1.96	
St. Louis[11]	173 ('32-'37)	2.3	0.57	5.8
Ramsey Co., Minn.	434 ('38-42')	1.5	1.84	11.2

The indications in decreasing order are disproportion, placenta previa, toxemia, premature separation of the placenta, and previous section.

We appreciate the coöperation of the private hospitals in allowing us to review the individual charts concerned.

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CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

J. B. Arey, M.D., Pathologist

Presentation of a Case

Dr. Peterson: The case is that of a nineteen-year-old white female who was admitted to the Minneapolis General Hospital the morning of December 31, 1943. The history obtained from the mother is as follows: The patient was in good health until January, 1943, at which time she acted as a blood donor. Following this she fatigued easily and her color was poor. However, she attempted to give blood again two to three months later, but was rejected because of a low blood pressure. In October, 1943, the patient sustained a small cut on her arm which subsequently became infected. This was treated at the Out-patient Department of the University Hospital by means of a "white powder." About two weeks after this treatment, the mother noted swelling of the right side of the face, not associated with redness or fever. Because of this she visited her physician the latter part of November, 1943, who noted a pimple inside her nose on the affected side. She was treated with sulfathiazole, receiving about 45 tablets during two to three weeks, following which the swelling subsided. About the middle of December, 1943, the patient complained of burning of her eyes, the conjunctivæ became inflamed and the lids turned black and blue.

Dr. Arey: Was this during the course of sulfathiazole therapy or shortly after the treatment?

Dr. Peterson: It was shortly after treatment had been stopped. It was considered to be an allergic skin condition, and she was told to avoid soap and cosmetics.

The present illness began four days prior to admission, at which time she complained of a sore throat. This increased the following day, at which time generalized aching and repeated vomiting was also noted. Her physician advised warm milk and repeated doses of aspirin, which the patient was unable to retain. The following afternoon her temperature was 102 degrees. The posterior pharynx showed multiple greyish-white spots. Although this did not appear typical of a diphtheritic inflammation, a culture was taken and sulfathiazole, grains 7½ every four hours, was prescribed. Inasmuch as she was unable to take anything by mouth because of the severe sore throat, the mother administered the sulfathiazole by rectum. It was estimated that she received a total of 10 grams of sulfathiazole from Tuesday until early Thursday morning. On Thursday morning the mother noted that the patient had repeated episodes of cyanosis, associated with deep breathing. She was seen by another psysician during the day, and at that time showed no evidence of laryngeal obstruction. At that time the throat culture was reported to be negative for diphtheria. During Thursday evening however, her condition became progressively worse, and she was sent by ambulance to Minneapolis General Hospital.

On admission to the Receiving Ward of Minneapolis General Hospital, the patient was moribund. Her respirations were very rapid and shallow. The chest was clear anteriorly, the pulse could not be felt, but the heart sounds could be faintly heard. Blood pressure could not be obtained. The skin was very dry, the lips and extremities very cyanotic. Oxygen, coramine and caffein were administered without avail, and the patient died shortly after admission. A white blood count prior to death showed 2650 cells per cubic millimeter, with no neutrophiles, 83 per cent lymphocytes and 17 per cent monocytes. The clinical impression was agranulocytosis, possibly secondary to sulfathiazole.

Autopsy

Dr. Arey: At postmortem examination, approximately six hours after death, the following laboratory tests were obtained. The B.U.N. was 71 mg. per cent; creatinine 3.3 mg. per cent; CO_2 combining power 31 volumes per cent; blood sulfathiazole level 1.8 mg. per cent. No urine was present in the bladder, but material expressed from the pyramids of the kidney showed a number of casts and red blood cells, but no crystals. Blood culture was sterile. In addition to the aforementioned laboratory work, the following findings were present at postmortem. The lower pharynx was discolored. The ventricular folds of the larynx were markedly swollen, discolored and showed patches of exudate on their surfaces. A small membrane was present beneath the ventricular fold on one side. The ventricular slit was narrowed to a triangular-shaped opening with a base and altitude of 7 mm. This inflammatory edema of the larynx, with its resultant obstruction, was the immediate cause of death. Cultures of the larynx showed only staphylococci, nothing resembling diphtheria. These may have represented a contaminant. Smears of the bone marrow showed a maturation arrest at approximately the leukoblastic level. Considerable cytolysis was present in these smears. Sections of the bone marrow will be discussed by Dr. Schleicher. The remainder of the autopsy was essentially negative. There was no evidence of pneumonia or renal damage. We will now show the slides.

Microscopic section of the kidney shows no abnormalities. No crystals were noted grossly, and none are visible in the section. There is no evidence of tubular damage. Section of one of the ventricular folds shows a large part of the surface epithelium to have sloughed off. There is a massive edema with deposition of fibrin, and a large number of bacteria, apparently cocci, are present throughout the section, especially on the surface. Almost no inflammatory cells are present, and these few are exclusively mononuclear. Section of the liver shows no abnormalities. None of the organs—liver, spleen, bone marrow—showed any focal areas of necrosis, such as have been described with sulfonamide poisoning. Dr. Schleicher will now discuss the bone marrow.

Dr. Schleicher: This is a section of the femoral bone marrow. The bone marrow units were grossly of normal size. Here is a small area showing congested sinusoids filled with erythrocytes. There are a few erythroblastic isles and almost no myelogenesis. As you look at slide No. 1 under the microscope, you will notice that myelopoiesis has been arrested between the myeloblast and leukoblast stage. No mature neutrophiles are present. All the fatal cases I have studied to date (all on sulfathiozole) show this same picture: A leukopenia with terrific myeloid immaturity and arrest usually occurring between the tenth and twelfth day. It is advisable to study the bone marrow in all cases of leukopenia, especially when associated with sulfonamide treatment. The cases I have studied have all been on sulfathiazole. Massive crude liver therapy (5 c.c. daily dose, repeated) has been of value when myelogenesis is arrested at a metamyelo level. We have three cases that responded well to this treatment. Fresh blood may be given as an adjunct. When the arrest is at a leukoblastic level, as in the present case, we have to date had no satisfactory results with liver therapy and/or transfusions. These, however, should be tried.

Dr. Arey: I would like to mention a few things, not only about this case, but about several of the toxic reactions following sulfonamide therapy. The final diagnoses in this case were inflammatory edema of the larynx and agranulocytosis. Although we have some circumstantial evidence incriminating sulfathiazole for the agranulocytosis in this case, we have no definite proof that it was responsible. The conjunctivitis mentioned following previous sulfonamide therapy, may or may not have represented a toxic manifestation of sulfonamide therapy. We know that following one toxic reaction to sulfonamides, another is apt to occur with resumption of therapy at a future date. However, the symptoms in this case apparently began with sore throat, vomiting, et cetera, prior to the final administration of sulfathiazole. The symptoms of primary agranulocytosis and agranulocytosis secondary to sulfonamide therapy are not unlike. Both start with pharyngitis, laryngitis and ulcerated lesions in the mouth and throat. Accordingly, although the present case may be used to warn of the dangers of sulfonamide therapy, we cannot prove that the agranulocytosis was secondary to sulfathiazole treatment. It may represent a primary agranulocytosis.

As regards the various signs of sulfonamide toxicity, a great variety of reactions may occur. These should be well known to everyone employing the drugs, so only some of the more frequent manifestations will be discussed.

Skin reactions following sulfonamide therapy are characterized by their pleomorphism. They may be urticarial, purpuric, morbilliform, erythematous, or may even appear as an exfoliative dermatitis. They usually appear after seven to nine days of administration of the drug, but may appear within twenty-four hours, usually following a previous sensitization. Skin reactions occur most frequently with sulfathiazole, less often with sulfapyridine and sulfadiazene.

Fever is a rather common sympton of sulfonamide toxicity. The onset may be associated with a chill and skin eruption. Care must be taken to differentiate the fever of the underlying infection from the fever brought about by sulfonamide toxicity, as the latter is a definite contraindication to further use of the drug. It is said to occur more frequently with sulfanilamide than with the other sulfonamides, but may occur with any.

The renal complications are extremely important. They may be divided into three types. (a) obstruction to the free passages of urine by sulfonamide crystals, (b) actual tubular damage, (c) obstruction to the free flow of urine by the products of hemolysis. Although hemoglobinuria has at times been reported as a result of the hemolytic anemia which may accompany sulfonamide toxicity, to date, no cases of uremia have been reported on this basis. That such an event may occur in the future is a distinct possibility. An adequate fluid intake and output is essential when sulfonamides are administered, and alkalinization of the urine by means of sodium bicarbonate may be of definite value in preventing precipitation of sulfonamide crystals.

Jaundice, if occurring during the first week of sulfonamide therapy, is said to be associated with an acute hemolytic anemia. In addition to hemolysis, however, such patients show signs of a toxic hepatitis, having an increased retention of bromsulfalein and urobilinoginuria.

The anemias associated with sulfonamide toxicity may be divided into the acute hemolytic and the slowly progressive. The latter very frequently occurs after two weeks of treatment, the former occurring earlier.

Agranulocytosis has already been discussed. These cases have a very poor prognosis, about 70 per cent dying within four to six days of the onset. Although leukopenia has been often seen with sulfadiazene, to date, I have seen no reports of a fatal agranulocytosis resulting from sulfadiazene therapy. That this will occur in the future is hardly to be doubted. It should be pointed out that leukopenia prior to the onset of

(Continued on Page 151)

HISTORY OF MEDICINE IN DODGE COUNTY

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(Continued from January issue)

Dr. Elias Wells Kellogg (1859-1923) was born in Roscoe, Illinois, on October 9, 1859, the son of Sylvanus Holbrook Kellogg and Sarah Loomis Kellogg.[238] His father was a native of Vermont, and his mother had been born in Michigan. The senior Kellogg was a Congregational minister who came to Renville County, Minnesota, in 1863 as a missionary to the Indians. The boy was reared at Lake Preston in Renville County, where he attended a Congregational mission school conducted by his mother. His lot was exceptionally hard. He had no stockings, but wore folded pieces of muslin to ward off the cold in the winter, and nothing at all on his feet in the summer. It was his task to fell and saw or split up timber near the school for use as firewood. After he had finished his studies at this school he taught school for a while in Renville County, and in 1880 enrolled in Carleton College at Northfield, Minnesota, from which he was graduated in June of 1885. He then began to study medicine at the Rush Medical College of Chicago, although he apparently was not a full-time student. In 1886 he obtained work as a member of a surveying crew of the old Minnesota and Northwestern Railway Company (now the Chicago and Great Western Railway Company), which at the time was constructing a line in Dodge County and other counties nearby. In February of 1887, as previously mentioned, he began to study medicine privately with Dr. James A. Garver of Dodge Center, whose assistant he was and whose relative by marriage he was to become. Doctor Kellogg remained in Dodge Center for about two years, and while he was there he was married to Miss Mary Estelle Westcott of Concord, whose father had come to Minnesota in 1857. Her mother was a daughter of Doctor Garver.

Doctor Kellogg had continued to attend the Rush Medical College of Chicago while he was associated with Doctor Garver, and in 1888 his professor of surgery at this school was the great Swiss surgeon, Nicholas Senn (1844-1908). Doctor Senn also served as Doctor Kellogg's preceptor. Doctor Kellogg was graduated from Rush in 1889. The sister[328] of Doctor Kellogg's widow reported that when Doctor Kellogg was graduated in 1889 he had no money and no suggestion as to where he might locate. He noticed an advertisement in a German-language newspaper of Milwaukee in which a pharmacist asked for a physician who would live in the rear of his pharmacy and send him prescriptions. Doctor Kellogg associated himself with this pharmacist, but the inducements that had been offered proved to be illusory. No patients came to him for a long time. Nevertheless, he resolved to remain in this particular location and to succeed, and succeed he did. By the year 1898, according to his sister-in-

law,[328] he was a relatively wealthy man. His position in his profession after that year seems to have been secure. It was said[328] that in the first eleven years of his practice in Milwaukee he delivered at least 2,800 infants.

Doctor Kellogg became professor of therapeutics in the old Wisconsin College of Physicians and Surgeons in Milwaukee, which was founded in 1894 and became extinct in 1912. He was a member of the American Academy of Medicine, the American Medical Association, the Wisconsin State Medical Society, the Milwaukee County Medical Society, and several others. He was a regular contributor to the *Journal of the American Medical Association,* and such time as he could spare outside his professional activities he gave to the Young Men's Christian Association of Wisconsin, of which he was a director at his death, and to other organizations. He was deacon of the Hanover Street Congregational Church of Milwaukee, and a member of the Masonic fraternity. When he died the *Milwaukee Journal*[329] observed:

> The death of Dr. Kellogg ended a career of the highest type in professional, public and private life, and takes from Milwaukee not only one of its able medical men but a personality which was an aid and inspiration to the many with whom he came in contact during his long residence and practice here.
>
> A wide circle of friends feel deeply the physician's death. Intensely interested in the advancement of his profession, one to whom an appeal for assistance or charity never failed of response; a public spirited citizen who worked efficiently for the public good; a lover of youth and a friend to it, all of this was accomplished by Dr. Kellogg quietly and unostentatiously, his friends pointed out.

Dr. Kellogg died at his residence in Milwaukee on May 19, 1923, of renal disease and complications.[328]

Dr. Samuel Houston Van Cleve (1853-1912) was of distinguished parentage. His father was the well-known military figure of the War of the Rebellion and Republican politician, Major General Horatio P. Van Cleve (1809-1891) of Minneapolis.[333] His grandfather, Dr. John Van Cleve, was a surgeon of note in New Jersey, of a Dutch family which had settled on Long Island in 1653. Doctor Van Cleve's mother, Mrs. Charlotte Ouisconsin Clark Van Cleve (1819-1907) was not less notable than her husband. She was a descendant of William Churchill Houston (1745 or 1746-1788), a member of the Continental Congress and a delegate to the Constitutional Convention at Philadelphia in 1787.[334] She was born near the mouth of the Wisconsin River in 1819. Her parents were accompanying the first United States soldiers to occupy what later became Fort Snelling. She is remembered for her valued autobiography, *Three Score Years and Ten,* published in Minneapolis in 1888, copies of which still command a respectable price. She also compiled *The Martyrs of Walhalla, or Early Missionary Annals of Northern Minnesota and Dakota,* published in 1890 by the Presbyterian Board of Publication and Sabbath-School Work in Philadelphia. She occasionally visited her son while he was in practice in Mantorville,[335] and sometimes spoke there.

Doctor Van Cleve was born on May 21, 1853, at Ann Arbor, Michigan, where his father at the time was engaged in farming and some sort of civil engineering. In 1856 the family moved to Long Prairie, Minnesota, where the elder Van Cleve endeavored to raise livestock. Doctor Van Cleve was graduated from the College of Physicians and Surgeons of New York City in 1880, and was licensed to practice medicine in Minnesota on November 26, 1883, receiving License No. 408.[40] He practiced his profession at Duluth for a few years, and served as city physician of Minneapolis from 1885 to 1887.[336] In November

of 1888 he came to Mantorville in Dodge County to inquire into the practice of Dr. John Flood (1850-1918).[141] Doctor Flood left Mantorville to go to the Rush Medical College of Chicago, as previously set forth herein, and Doctor Van Cleve conducted his practice for him while he was gone.[337] An interesting reference to Doctor Van Cleve was made by one Dodge County newspaper[338] in 1890.

> Dr. Van Cleve left Tuesday for Rochester, where he goes to take charge of Dr. Mayo's [*sic*] practice during the week, while the Mayo's are in the East.

When Doctor Flood finished his work at Rush and returned to Mantorville, Doctor Van Cleve bought his practice and remained at Mantorville until the summer of 1900. He was elected first vice president of the Southern Minnesota Medical Association in 1894, and during part of his stay in Mantorville he was coroner of Dodge County. In 1900 he removed to Saint Cloud, and his practice in Mantorville was taken over by Dr. Edward I. Brown (1869-), now of Saint Paul.

Doctor Van Cleve became a member of the Minnesota State Medical Association in 1903, while he was living in Saint Cloud. In 1904 he settled in Minneapolis, where he opened an office at 36 Chute Building on East Hennepin Avenue. He occupied the old Van Cleve family home at 603 Fifth Street Southeast. On February 5, 1906, he was elected to membership in the Hennepin County Medical Society,[339] and about a year later he moved his office to 400 Central Avenue in Minneapolis, retaining his residential address. He died in Minneapolis on November 19, 1912, at the age of fifty-nine years.[340]

Dr. Guy Philander Corwin (1855-1929) spent much of his early life in Dodge County. He was born in Barry County, Michigan, on March 23, 1855.[341] He received his primary education in the public schools, and this was augmented by three years of instruction in the old Wesleyan Methodist seminary in Wasioja in Dodge County. He then read medicine for a while with Dr. John Flood (1850-1918) of Mantorville as his preceptor, and also taught school. He was married to Miss Emma G. Garrison of Wasioja on October 2, 1879. Their infant daughter, Olive Belle Corwin (1883-1888) is buried in Wildwood Cemetery at Wasioja. Doctor Corwin attended the old Minnesota Hospital College of Minneapolis, but was graduated from the University of Minnesota College of Medicine and Surgery in 1889, since the Minneapolis institution was merged with the University of Minnesota in 1888. Doubtless Doctor Flood had urged young Corwin to attend the Minneapolis Hospital College, for Doctor Flood owned stock in the college.

Previous to his graduation from the University of Minnesota Doctor Corwin had served as resident physician at the Minneapolis City Hospital under the famous Dr. James Henry Dunn (1853-1904), "one of the most eminent surgeons of the northwest,"[342] who was Minneapolis city physician in 1887 and 1888, having succeeded Dr. Samuel H. Van Cleve (1853-1912), in that post.[336]

Ward E. Corwin,[341] son of Doctor Corwin, reported that as city physician his father discovered a patient in the southeast river flats of Minneapolis who was a victim of leprosy (probably *spedalskhed)* in 1887, and he added that the discovery elicited considerable attention at the time. It has been shown,[25] however, that Dr. William H. Caine (1854-1902) of Stillwater discovered a leper in Washington County in 1881, and that Dr. Alexander J. Stone (1845-1910) discovered one in Saint Paul in 1883.[342]

Dr. Corwin practiced medicine for a short while in Wasioja after his graduation from medical school in 1889, but it is recorded[40] that in July of 1889 he failed to pass the examination of the Minnesota State Board of Medical Examiners. Doctor Corwin's son[341] reported that Doctor Corwin moved to Augusta, Wisconsin, in the latter part of 1890, and it is known that he never again applied for licensure in Minnesota. James Springsted,[343] who operated a drug store in Dodge Center from about 1880 to 1910, declared that he had filled Doctor Corwin's prescriptions while the physician practiced at Wasioja, and said that Doctor Corwin delivered several babies while he was in that village. Moreland[67] corroborated the statement that Doctor Corwin practiced medicine while he was in Wasioja, although Ward E. Corwin[341] did not believe that this was so. Evidence to support the contention of Springsted and Moreland appeared in a Wasioja item in the *Dodge Center Record*[344] in 1898: "Dr. Corwin, late of Augusta, Wis., is spending a little time here now. The doctor has many friends who are glad to welcome him in our midst again."

In about 1898 Doctor Corwin moved to California because of his failing health, and there he practiced in various towns, the last being Los Angeles. He retired in 1917, and died at his son's ranch at Puente, California, on February 16, 1929, of gastric ulcer.[345].

Dr. Cornelius V. Lynde (1858-1926) was born in Vermont in 1858, the son of Mr. and Mrs. John Lynde.[330] He was graduated from the Hahnemann Medical College and Hospital of Chicago in 1883, and was licensed to practice medicine in Minnesota on December 23, 1886, under License No. 1298.[40] As previously mentioned, he came to West Concord in Dodge County from Faribault in August of 1890,[145] and in April of 1891 removed to Northfield.[146] He practiced in various towns, such as Parkers Prairie and Medford, and died of diabetes in an Owatonna hospital on November 27, 1926.[346, 347]

Dr. Charles Osborn Wright (1864-), as has been said, came to Kasson in the summer of 1891, buying the practice of Dr. John Flood (1850-1918) of that town, who was preparing to leave Dodge County.[148] Doctor Wright was born on a farm in Washington County, Minnesota, on May 26, 1864, the son of John Wright (1836-1919) and Hannah E. Stevens Wright (1833-1921). His father was a Yorkshireman who had come to Canada in 1844 with his parents and in 1851 had settled at Point Douglas, on the west side of the mouth of Lake Saint Croix, in what is now Washington County. Doctor Wright's mother was a native of Canada who had been brought to Cottage Grove, in Washington County, by her parents in 1850.

Doctor Wright attended country schools until he was sixteen years old, and at that age he entered Hastings High School. After he was graduated from this school he studied medicine with Dr. William Thorne[176] (1820-1908) of Hastings for about a year, and in 1887 enrolled in the old Minnesota Hospital College at Minneapolis. In 1888 this school was absorbed by the University of Minnesota, so that in 1890 Doctor Wright was graduated from the University of Minnesota College of Medicine and Surgery. He was licensed to practice medicine in Montana by special permit, obtained through the intervention of Dr. John F. Fulton (1859-1932) of Saint Paul, and during 1890 and part of 1891 he served as medical officer of a construction crew of the Northern Pacific Railway Company, which at the time was building a 125-mile line from Missoula, Montana, to Mullan, Idaho, along the Missoula River and through the Bitterroot range of the Rocky Mountains. When this line had been

completed Doctor Wright returned to Minnesota, where he was licensed to practice medicine on April 10, 1891, receiving License No. 163.[40] He then located in Kasson. At Kasson, Doctor Wright was married to Miss Nina Ruhberg of that town. On June 21, 1893, he was elected to membership in the Minnesota State Medical Society, at the twenty-fifth annual session of that body in Minneapolis.[348]

In the spring of 1898, as stated previously, Doctor Wright took a post-graduate course at the New York Polyclinic Medical School and Hospital,[162] and in the fall of that year he was back in Kasson. He left Kasson in September of 1898, going to Luverne in Rock County, where he is at the present writing (1943). There, in 1905 and 1906 he served as president of the city council, and in 1907, 1908, 1910, 1911, 1912, 1919, 1920 and 1921 he was mayor of Luverne. He has served as health officer of Luverne and of Rock County, coroner of Rock County, and since 1922 has been local surgeon for the Chicago, Minneapolis, Saint Paul and Omaha Railway Company.[148] It was said that he owned the first automobile to be used for business purposes in Luverne: a one-cylinder chain-drive machine. On October 1, 1915, at the forty-seventh annual session of the Minnesota State Medical Association, Doctor Wright was elected third vice president of that organization.[349] On April 1, 1940, in celebration of his fiftieth year in the practice of medicine, the Rotary Club of Luverne honored Doctor Wright at a special meeting, a report[350] of which follows:

> The fiftieth anniversary of Dr. C. O. Wright's entrance into the practice of medicine was observed Monday, April 1, 1940, by the Luverne Rotary Club, of which the doctor is a member. Dr. Wright received his "license" to practice medicine on April 1, 1890,* following his graduation from the medical school of the University of Minnesota, and immediately thereafter began practicing his profession in Montana, as a surgeon for the Northern Pacific Railroad then engaged in building its line west from Missoula. Dr. Wright has practiced in Luverne for forty-one years.
>
> A special program was prepared for the event, including a few appropriate songs and short talks by members of the club. The speakers paid tribute to the remarkably active and unselfish service rendered by Dr. Wright during his long residence in Luverne, both as a physician and a citizen who found his greatest happiness in rendering service to others and in aiding in the upbuilding of the community The talks were naturally interspersed with the recalling of amusing incidents at the expense of the doctor, who has been a life-long devotee of hunting, fishing, golf and other sports.

In October of 1941 **Dr. Frank French Clifford** (1863-) completed fifty years of service to the people of West Concord and the surrounding countryside, and he celebrated this achievement by retiring and moving to Rochester. Doctor Clifford was born in Stanton Township in Goodhue County on October 1, 1863. He was the son of Arthur T. Clifford, a native of Maine, and Sarah Ellis Clifford, a native of New York, who were said to have come to the city of Red Wing on October 10, 1855, and to have farmed in Stanton Township until 1893, in which year they moved to Cannon Falls.[270]

The boy was educated at the schools in Cannon Falls, and he spent two years in teaching school at Vasa before he began to read medicine with Dr. Alonzo T. Conley (1847-1920) of Cannon Falls. He next attended the State University of Iowa College of Medicine at Iowa City, from which he was graduated in 1885. He was licensed to practice medicine in Minnesota on October 16, 1885, receiving License No. 1113.[40] Throughout the winter of 1885-1886 Doctor Clifford practiced medicine at Northwood in Worth County,

*In Montana, not Minnesota.

Iowa, and in the spring of 1886 he located at LeCenter in Le Sueur County, Minnesota, where he remained until May of 1891. At LeCenter, in January of 1888, Doctor Clifford[351] reported, he was called to see a twelve-year-old boy who had suffered "a complete lateral luxation outward of both of the bones of the forearm, the head of the ulna being above the condyles of the humerus." He administered ether, and reduced the luxation without incident. He said[352] such a type of luxation was particularly rare, the only one of its kind he knew of having been reported by Nélaton.

In May of 1891 Doctor Clifford visited West Concord in Dodge County to determine whether or not he should locate there.[149] His decision was favorable, and by June of that year he was well settled in the village.[150] As the years went by he became one of the most influential citizens in West Concord. He dealt in real estate, was postmaster for six years, helped to organize the local telephone company, and was a partner in a drug store in the town. He was also county physician of Dodge County, health officer of West Concord, member of the village board of education, member and president of the village board and local surgeon for the Chicago and Great Western Railway Company. He has been a member of the Dodge County Medical Society, the Southern Minnesota Medical Association, the Minnesota State Medical Association and the American Medical Association; and of such fraternal organizations as the Masons, Odd Fellows and Modern Woodmen of America.

Dr. Carlos Lord Chambers (1858-1904) was born at Davis, Illinois, on April 12, 1858, the son of John W. Chambers and Nancy Lord Chambers,[212, 330] daughter of Judge Samuel Lord (1831-1880) of Mantorville. Dr. Chambers' parents had come to Mantorville in the sixties, bringing their infant son with them. His father was a traveling salesman for a carriage manufacturer, and is known to have conducted a furniture store in Kasson for a number of years. The young man was educated at Carleton College at Northfield, from which he was graduated in 1881.[212] He then entered the Rush Medical College of Chicago. He was graduated from this institution as a Doctor of Medicine in 1883. "Carl Chambers is now a full-fledged M.D.," the *Dodge County Republican*[352] observed in March of 1883. "He graduated from Rush Medical College."

Doctor Chambers practiced for a while in Beloit, Wisconsin, and then came to Minnesota, where he was licensed to practice medicine on November 12, 1885, by Certificate No. 1124.[40] He located at Canby, Minnesota, for some years, and on May 12, 1886, he was married to Miss Nellie Roe of Mantorville.[353] There is evidence[100] that Doctor Chambers was licensed to practice medicine in the Territory of Dakota on April 24, 1888, but the evidence was disputed by Grassick.[100] At about the first of the year 1892 Doctor Chambers returned to Kasson,[152] and from that time until his death he remained in that town. He was elected to membership in the Minnesota State Medical Society at that organization's twenty-fourth annual session at Saint Paul on June 15, 1892,[354] and he was also a member of the Southern Minnesota Medical Association, the American Medical Association, and for a few years, the Olmsted County Medical Society. He served as president of the Kasson Board of Education and was highly regarded as a successful practitioner and a public-spirited citizen.

Lord[1] contributed the following sketch of Doctor Chambers, who was his cousin:

. . . Carl practiced his profession for a few years at Canby, Minnesota and then took up his abode at Kasson where until his death we lived again in close and intimate friendship. He was master of his profession. He died at the age of 46 from the effects of a surgical operation performed to reunite a broken hip joint. While he did not live to an old age, no one in my acquaintance has crowded more of usefulness into three score years and ten than Carl did in 46.

In June of 1904 Doctor Chambers was thrown from his buggy while he was returning from a professional call in the country.[212, 355, 356] A fractured hip resulted. In October of 1904[357] it was reported that he had returned to his practice, but the fractured bone apparently did not unite satisfactorily. On November 30, 1904, Doctor Chambers was operated on at the Northwestern Hospital in Minneapolis, but to no avail. He died in that hospital on December 5, 1904.[212, 356, 358]

Of him a colleague in the Minnesota State Medical Association wrote:

He was a resolute, resourceful, and high-minded man who inspired immediate and lasting confidence. His professional career was one of ceaseless activity and untiring devotion to those who sought his help, never shirking a duty, slighting a patient, or sparing himself.

Dr. Louise Marie Gerber-Dietmeier (1865-1936) was born in Monroe, Green County, Wisconsin, on November 23, 1865,* the daughter of John and Magdalene Chakviarr Gerber.[40] Her mother and father soon moved to the Swiss colony of Berne† in Milton Township in Dodge County, where the young girl was reared. She attended and was graduated from the Kasson High School, and thereafter taught school for a while. Deciding to become a physician, she entered the University of Minnesota, and was graduated from the College of Medicine and Surgery of that institution in 1893. She was licensed to practice medicine and surgery in Minnesota on April 6, 1894, receiving License No. 413.[40] Soon after her graduation she came to West Concord in Dodge County. At West Concord she seems to have been well liked, and she became the friend of many a family in and outside the village. But it does not appear that Doctor Gerber-Dietmeier remained long in West Concord, for she was soon located in Ada, Minnesota, where she stayed for several years. In 1895 and 1896 she did postgraduate medical work at the New York Polyclinic Medical School and Hospital, and in 1898 she made an extensive tour of certain lands in Asia and visited the Hawaiian Islands. On her return she settled in Jasper, Minnesota, where she discovered a true leper. In 1910 Doctor Gerber-Dietmeier visited Europe, where she devoted much time to the study of medicine in various cities, and when she returned to Jasper she built a combination hospital and office building. Her keen interest in travel and subjects not ordinarily considered to be concerned with medicine was reflected in some of her talks before the Southwestern Minnesota Medical Society. On January 15, 1909, at Pipestone, for instance, she spoke before members of this society on "Christianity vs. Materialism Among Physicians,"[359] and on July 22, 1909, before the same society, she spoke on "Medical and Other Notes on a Trip to Hawaii and the Orient."[360]

On June 2, 1919, at Freeport, Illinois, Doctor Gerber-Dietmeier was married to Mr. Lewis Dietmeier. She lived and practiced medicine for years at Jasper, until, on May 8, 1936, she suffered a severe nervous breakdown. She died in

*This is the date of birth furnished to the authors by the Minnesota State Board of Medical Examiners (reference 40). Data supplied by the Minnesota State Board of Health (reference 330) would indicate that Doctor Gerber-Dietmeier was born on November 23, 1868. The latter date also was used in an obituary of Doctor Gerber-Dietmeier printed in the *Jasper Journal;* but the authors did not see the original version of this obituary.

†See: Heilbron, B. L.: Swiss Settlement in Minnesota. Minnesota History 8:174-175 (June) 1927.

Saint Peter on July 2, 1936, of croupous pneumonia, generalized arteriosclerosis and chronic cystitis.[40]

Dr. Eric Olonzo Giere (1868-1942) was born near Deerfield, in Dane County, Wisconsin, on April 10, 1868, the son of Ole Nelson Giere and Inger Himle Giere.[153] His father was a pioneer farmer of Dane County; both parents were born in Norway, where a great grandfather of Doctor Giere, Dr. Erik C. Himle, had been a physician at Voss.[153] At an early time Doctor Giere's parents moved to Dodge County, and the boy was educated in the public schools of Rock Dell Township in Olmsted County. His preparatory education was obtained at Saint Olaf College at Northfield, Minnesota, from which he was graduated in 1888. He also had attended Luther College at Decorah, Iowa. From 1888 to 1892 Doctor Giere was a student in the University of Minnesota College of Medicine and Surgery, from which he was graduated on June 2, 1892.[153] He served three months as an assistant physician at the Rochester State Hospital, and was licensed to practice medicine in Minnesota on October 7, 1892, receiving License No. 273.[40] In that month he settled in Madison, in Lac qui Parle County, where he remained until May of 1895 when he moved to Hayfield, where his brother, Joseph C. Giere (1873-1899), was operating a drug store and studying medicine. Doctor Giere himself said[153] that he settled in the town because of its proximity to the Mayo Clinic at Rochester. It is recorded[361] that on January 7, 1896, Doctor Giere was elected a trustee of the village of Hayfield. Doctor Giere left Hayfield in January of 1897 to return to Madison, where from 1901 to 1911 he was associated with Dr. Marcus Thrane (1874-). He became president of the council of Madison, health officer of the town, coroner and also county physician of Lac qui Parle County, and secretary and president of the Camp Release Medical Society.[153] Doctor Giere remained in Madison for seventeen years, during which he spent much time in postgraduate training in surgery, which was his primary interest for most of his life. In 1898 he attended the New York Polyclinic Medical School and Hospital and the New York Post-Graduate Medical School; in 1900 the Chicago Post-Graduate Medical School and the Illinois School of Electro-Therapeutics; in 1912 the Illinois Post-Graduate Medical School, and in 1913 the Tulane University of Louisiana School of Medicine.[153] He became a fellow of the American College of Surgeons when it was founded in 1914.

From January of 1914 to May of 1921 Doctor Giere practiced at Watertown, South Dakota, where he had been licensed to practice medicine on May 31, 1900.[72] There he was associated with Dr. Finn Koren (1873-) and Dr. Anders Einar Johnson (1871-), who had been with him at Madison, Minnesota. In 1914 he visited clinics in Oslo, Copenhagen, Berlin and London. At Watertown Doctor Giere served as chief of staff of the Lutheran Hospital, and he did much work for the War Department in 1917 and 1918 as an examining physician for prospective entrants into the army.

In May of 1921 Doctor Giere removed to Saint Paul, Minnesota, where he became chief of staff of the Saint Paul Hospital. In 1922 he took additional training in surgery at the Chicago Laboratory of Surgical Technic. In May of 1927 he moved to Minneapolis, where with his three sons he conducted the Giere Clinic in the Metropolitan Bank Building, and where he was chief of staff of Fairview Hospital. He was a member of the Hennepin County Medical Society, the Minnesota State Medical Association and the American Medical Association, as well as of the American College of Surgeons, as mentioned previously. Doctor Giere was married twice. His first wife was the former

Miss Anna Louise Williamson, a native of Goodhue County, Minnesota; and his second wife was the former Miss Anna Cecelia Nielson, a native of Madison, Wisconsin.

Late in December of 1941 Doctor Giere became ill, and he was taken to the Fairview Hospital in Minneapolis. He died there on February 12, 1942,[362] at the age of seventy-three years, and was buried in Roselawn Cemetery in Saint Paul.[363]

Dr. James McCrea (1863-1939) was born in Frankton, Ontario, Canada, on September 25, 1863, the son of James McCrea and Elizabeth Hamilton McCrea.[330] His father was a North of Ireland man, a physician who had been graduated from the University of Edinburgh, and his mother likewise was from the North of Ireland. The young man was educated at Saint Catherine's, Ontario, and was graduated from the Ottawa Normal School in 1885. His intention for some time had been to become a teacher. He taught school for a number of years, and finally decided that he would rather be a physician. He was graduated from the McGill University Faculty of Medicine in Montreal on April 5, 1894, and on July 10, 1894, was licensed to practice medicine in Minnesota.[40] In August of 1894 he was licensed to practice medicine in South Dakota,[72] and he located at Salem in that state. While he practiced in Salem he was married to Miss Emma Schneider, of Howard, South Dakota, on August 1, 1895.[154] In the fall of 1895 Doctor McCrea came to West Concord in Dodge County, as set forth previously, but he left in March of 1896, to move to Fulda in Murray County, where he remained until his death.[154] There he became president of the Citizens' State Bank, health officer of Fulda and a member of the town board of education. He was a member of the Southwestern Minnesota Medical Society, which he served as president, the Minnesota State Medical Association, and the American Medical Association.

Dr. McCrea died at Fulda on December 19, 1939, at the age of seventy-six years. At his death it was said[364] of him:

> Doctor McCrea had an extensive obstetrical practice and kept abreast of the times. His early practice was in the horse and buggy days when good roads were the exception. He was one of the incorporators of the Citizens State Bank and was active in its management since its incorporation in 1908.

(To be continued in the March issue)

References will appear at the conclusion of this article.

President's Letter

BACKING THE NEW COUNCIL

The North Central Conference held its second annual session at the Saint Paul Hotel last month and passed a resolution of endorsement to the new Council on Medical Service and Public Relations which should be of important assistance to that harassed body in the critical period ahead.

This action will be taken to the National Conference on Medical Service for further affirmation this month and, in view of the need for unity of purpose in the medical profession, Minnesota representatives will leave no stone unturned which will help to achieve a solid national backing for the Council.

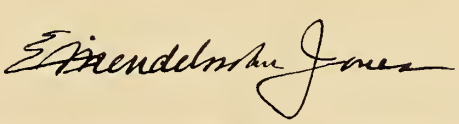
In the meantime, it is highly significant that the North Central Conference, composed of representatives from Wisconsin, Minnesota, Iowa, North and South Dakota and Nebraska, which last year set in motion the resolutions which came to a head in the formation of the new Council by the American Medical Association in June, should this year have publicly expressed its confidence in the ability and purpose of that Council.

The fact is that the Council has been under fire from many quarters recently, first, because it has not yet established an office of information in Washington and, second, because its expressions of policy thus far have been deemed weak and disappointing by several medical associations. These associations have separately and in groups such as the Western Public Health League, made up of eleven western states, expressed an intention of taking the bull by the horns and forming their own sectional offices of information in Washington.

The fact that medical organizations in many parts of the country are alive to the menace in the present political situation and impatient of delay in taking action may well be regarded, in itself, as a healthy sign. But the North Central Conference, after examining the situation in the light of personal reports from Minnesota's member of the Council, Dr. A. W. Adson of Rochester, and from the newly engaged executive secretary, Dr. G. Lombard Kelly, dean of the University of Georgia medical school, found that impatience in this case is hardly justified.

Immediately after its creation last June, the Council set about forming its organization and securing an executive secretary, without whom nothing effective could be accomplished. It was a task which could not be done overnight, under any circumstances. In wartime, the difficulties proved to be enormous and the conference felt that the Council is to be congratulated on its progress and especially on having eventually secured a man of the exceptional qualifications of Dr. Kelly. It felt certain that the Council would now be able to carry forward the vigorous program so much desired by all medical associations in the country.

The resolution affirming this feeling is printed in the Medical Economics section of this issue of Minnesota Medicine and should be read by every member. It calls for the speedy establishment of an office of information in Washington but likewise expresses faith in the Council and disapproval of overlapping sectional representation at a time when, if ever, medicine needs harmony and singleness of purpose in its ranks.



President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

IS KAISER'S PRE-PAYMENT MEDICAL PLAN GENERALLY APPLICABLE?

HENRY J. KAISER is an outstanding example of American genius as an organizer and high pressure executive. His accomplishments in shipbuilding are nothing less than marvelous. His pre-payment medical plan has been given some national publicity. Kaiser himself is said to be rather proud of the accomplishments of his pre-payment medical plan for that is just what it is. Fifty cents a week is a payroll deduction and a salaried corps of doctors supply the medical care in hospitals supported by the money collected.

The most recent publicity given the project is a book entitled "Kaiser Wakes the Doctors" by deKruif which appeared last year. We have not purchased the book nor read it, not being enthusiastic about the deKruif or his opinions about medicine. A lengthy review of the book with excerpts, however, appeared in *California and Western Medicine* last October, which gives a very satisfactory idea of the book and its misrepresentations.

In judging whether the Kaiser medical plan is actually a discovery and a solution of the cost of medical care as contended by deKruif, certain facts should be known.

The Kaiser plan provides for a fifty cents a week or $26 a year payroll deduction on employed individuals—well-paid individuals for the most part. It applies to a selected group to begin with as few chronic invalids are presumably employed. The overhead in collecting funds is minimal. No expense is involved in soliciting members of the insurance organization. Contributions by the hundred thousand employes should furnish $2,600,000 with which to work. It is stated that 40 per cent of the medical cost is received through State Compensation payments which brings the total sum available to over $3,000,000. This sum is spent for care of employes concentrated in a small area. It provides medical care for the employes only and does not provide for their families.

It can be readily seen that the setup for succesful operations of this pre-payment organization is particularly favorable. No organization without similar advantages could operate successfully on any such membership fee.

Nevertheless deKruif in his flamboyant style claims that Kaiser has made a discovery which will revolutionize the practice of medicine. He foresees that "little Mayo clinics" will be established even in small localities. The difficulties which are encountered in selling healthy individuals any insurance project, the added difficulties encountered when many employers are involved, the reluctance of healthy individuals and the eagerness of sickly ones to join such an organization, all tend to increase costs and endanger the actuarial soundness of voluntary insurance plans.

The whole tone of deKruif's book as shown by the excerpts mentioned is irritating. Many of the statements are false either directly or by inference and he repeatedly makes jibes at the medical profession, its national organization, the fee system, and the conservatism of the profession in general. The most deplorable results of this particular effort of deKruif to open the eyes of the medical profession is that his literary style is rather popular in nonmedical circles and his misleading statements have been rather widely spread.

No one is more eager to evolve methods for easing the cost of medical care than the physician and many new methods including prepayment plans are being tried out. There is nothing new about Kaiser's plan and his plan did not awaken the California physicians into forming the California Physicians Service as deKruif stated, for Kaiser's plan followed the organization formed by the California physicians. In addition deKruif is wrong in stating physicians are opposed to pre-payment plans and the numerous such organizations sponsored by medical groups are proof of this. The failure from a financial standpoint of many such sponsored plans which do not possess the advantageous

setup of Kaiser's organization as herein described is simple proof of the difficulties inherent in most pre-payment plans. It seems evident that a pre-payment plan based on the much publicized seven cents a day rate adopted by Kaiser will go on the rocks financially if generally applied.

THE BARDEN-LA FOLLETTE BILL

AN amendment to the Social Security Act known as the Barden-LaFollette Bill was passed by Congress last year and signed by the President July 6, 1943.*

In brief the Bill provides for vocational rehabilitation and physical restoration of war disabled civilians who have been civilian employes of the U. S. government or civilians in various activities such as the Air-Craft Warning Service, Civil Air Patrol, etc., and of citizens of states who are "found to require financial assistance with respect thereto." The federal government will provide: (1) the entire state administration expense of the program; (2) the entire cost of rehabilitation of war disabled individuals; and (3) one-half of the cost of the rehabilitation of other disabled persons.

In other words the federal government will subsidize the states which meet requirements by meeting half of the costs of the medical and vocational rehabilitation of their indigent citizens.

The federal government does not limit the states in their individual programs to the rehabilitation of only their indigent citizens but federal funds can be used only for the indigent cases. Rehabilitation of war disabled citizens however is not limited to indigents.

Expenditures for medical care in general including medical and surgical fees will be designated by the Administrator of the Federal Security Agency and will be in line with similar expenditures paid by state agencies such as the Workmen's Compensation.

The rehabilitation through vocational training and medical care of those unable to provide this service for themselves so as to make them self-supporting citizens is a worthy and economically valuable undertaking. In Minnesota we have a Division of Social Welfare with Dr. E. J. Simons in charge of the Medical Unit. Rehabilitation medically but not vocationally is providing the indigent of the state by this organization. The Barden-LaFollette Bill constitutes therefore another subsidy of states in matching state funds appropriated not only for medical rehabilitation but for vocational training of indigent citizens of all the states.

The medical rehabilitation of members of the armed forces and the vocational rehabilitation of those unable to return to their previous jobs after receiving medical care is naturally the function of the federal government.

Some tax payers believe, however, that rehabilitation of indigent citizens should be a function of each state. Some states such as West Virginia where Federal subsidy for rehabilitation was first tried out as an experiment three or four years ago have difficulty in appropriating sufficient funds for this purpose. If one state obtains a federal subsidy for any project it is natural for the other states to want the same subsidy and a state legislature has to exert considerable self-control to refuse any subsidy the other states are receiving.

The main objections to federal subsidies of the states is that money received by states is too often regarded as a gift and is spent extravagantly. State authorities too often ignore the fact that such sums are actually taxes collected from citizens of that state. Another equally important objection to federal subsidy of states is that it places control of state activities in the hands of bureaus in Washington.

Minnesota has provided for medical rehabilitation of its indigent citizens which after all is more important than vocational rehabilitation. A healthy man should be able in most instances to find a suitable job. In vocational rehabilitation lies the danger of an application of the program to those not strictly in the indigent group which may lead to extravagant expenditures.

MORE DOCTORS AND NURSES FOR THE SERVICES

THE Army and Navy are preparing the way for enlisting and training of medical officers for casualties which in the next months may amount to half a million. The Army needs an additional 3,000 medical officers, the Navy an equal number, and United States Public Health Service some 200, according to representatives of the Surgeons General of the three services

*A description of the Bill appeared in the *Journal AMA* for October 30, 1943 (p. 572).

and a representative of the National Committee on Procurement and Assignment, who visited the Twin Cities last month.

As a result of meetings held in the Twin Cities with those declared available by local Procurement and Assignment Committees, some fifteen physicians signified their willingness to apply for commission.

The nursing profession has been placed under the War Manpower Commission, and State and Local Procurement and Assignment Committees have been formed in each state. Nurses are still in demand for the armed forces, and pressure is being exerted to increase enlistment. The loss of nurses has already presented a serious problem in hospital administration. A dozen small hospitals in the state have been forced to close their doors simply on account of lack of nurses. This has proved a hardship to certain already over-worked physicians who have thus been forced to travel greater distances with their patients who require hospital care.

The trained nurse employed in a physician's office is a possible source for more enlistments. A survey is being made of these nurses who are eligible for military service, and doctors are being asked to coöperate in releasing them for military or more essential civilian services. Doctors who have a real need of a trained nurse in the office could substitute one not eligible for military service. There just aren't enough nurses to supply the demand.

In Memoriam

HAROLD B. LOUGHERY

Word has been received of the death, on November 22, of Dr. Harold B. Loughery who was formerly a Fellow in Surgery in the Mayo Foundation.

Dr. Loughery was born at Palestine, Illinois, in 1896. He received the degree of B.S. in 1919 and of M.D. in 1922 from the University of Illinois. He was an intern at the Ancker Hospital in St. Paul in 1922. He then practiced in Illinois for a year and at Muskegon, Michigan, for four years. He was a Fellow in Surgery in the Mayo Foundation from October, 1927, until October, 1930: from that time until his death he practiced surgery in Muskegon, Michigan.

He was a fellow of the American College of Surgeons and a member of the American Medical Association, the Alumni Association of the Mayo Foundation, Alpha Omega Alpha and Nu Sigma Nu.

GEORGINE M. LUDEN

Word has been received of the death, on November 20, of Dr. Georgine M. Luden who was formerly a Fellow in Pathology in the Mayo Foundation.

Dr. Luden was born in Amsterdam, Holland, in 1875. She received the degrees of physician (Arzt) from the Ludwig-Maximilian University in Munich in 1911, M.D. from the University of Munich in 1912 and Ph. D. in Pathology from the University of Minnesota in 1920. She was an intern in Munich for one year: at the Pathogenic Institute of Professor Max V. Borst for six months; at the Surgical Polyclinic for two months; and at the Medical Clinic for four months. She entered the Mayo Clinic as a visiting physician in 1912. She was a volunteer in cancer research here from 1914 to 1915, volunteer fellow in the Mayo Foundation from 1915 to 1920, first assistant in pathologic research from 1920 to 1921 and was first assistant in cancer research from 1921 to 1923 when she became an associate in cancer research.

After leaving the Mayo Clinic in 1929, Dr. Luden resided in Victoria, British Columbia, until her death. At the outbreak of the war she resumed work in pathology in the Victoria hospital until last year when her illness prevented that activity.

She was a member of the American Medical Association, the American Association for Cancer Research, the Association for the Study of Internal Secretions, the Medical Women's International Association, the American Association for the Advancement of Science, the International Association of Medical Museums, and the Association of Resident and Ex-Resident Physicians of the Mayo Clinic.

EDWIN J. WELTE

Lt. Edwin J. Welte of Saint Paul was killed in the battle of Tarawa in the Gilbert Islands when shell fire struck a landing boat.

Born in Crookston, Minnesota, Dr. Welte attended St. John's University and received his medical degree from the University of Minnesota. He held a surgical fellowship at the Minneapolis General Hospital before entering the Navy.

Dr. Welte is survived by his wife and son James, twenty-three months old, who live at 2057 Laurel Avenue, Saint Paul, and by his parents, Mr. and Mrs. H. J. Welte of Crookston, two brothers, Sgt. George Welte in North Africa and Alfred, a sailor at Farragut, Idaho, and a sister Marion, a student at St. Catherine's College, Saint Paul.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

ACTION BY THE NORTH CENTRAL CONFERENCE

EDITOR'S NOTE: The North Central Conference stems from the old Northwest Medical Conference. It was revived under its new name last year after the old conference had developed into the National Conference on Medical Service and thus lost its character as a forum for discussion of problems of this area. The action embodied in the resolution taken at the second annual meeting of this informal body held in St. Paul last month, has special significance because it was the North Central Conference, at its first meeting last year, which started the movement for a new unit of the American Medical Association. This unit, among other duties, was to be charged with the responsibility of setting up an office of information for medicine in Washington.

A group of western states, a New England group and separate county organizations in such states as Indiana and Michigan have expressed themselves as dissatisfied with the progress made by the Council and have threatened to set up organizations of their own to take care of functions assigned to the Council. The resolution printed below is an endorsement of the Council and a move to prevent creation of many spokesmen instead of one for medicine in Washington.

RESOLUTION ON THE COUNCIL ON MEDICAL SERVICE AND PUBLIC RELATIONS†

WHEREAS the North Central Conference, composed of officials and representatives of the state medical associations of Wisconsin, Iowa, Minnesota, North and South Dakota, and Nebraska, is assembled on this day, January 9, 1944, in the City of Saint Paul, Minnesota, for the purpose of discussing economic problems common to all of the states of this area; and

WHEREAS we, as members of this Conference, are conscious of the fact that legislation is pending in the Congress which may alter the normal procedures of the practice of medicine; and

WHEREAS we are likewise mindful of the activities of the new Council on Medical Service and Public Relations and are disturbed by the fact that some states and groups of states have proposed to establish their own offices of information in the national capitol independent of the national organization of physicians, the American Medical Association; and

WHEREAS we, as officers and representatives of the states represented in the North Central Conference, have full faith and confidence in the ability and purpose of the Council on Medical Service and Public Relations to accomplish the objectives of all these separate groups: Therefore be it

RESOLVED, That we urge that an office of medical information be established in Washington, D. C., by and under the direction of the Council on Medical Service and Public Relations and that the Trustees of the American Medical Association provide adequate funds for the establishment of such an office, together with the necessary personnel, so that the medical profession of America can be represented, with harmony and unity of purpose, by a single national office rather than by a number of separate offices established by separate and unrelated professional groups as proposed by several states and groups of states, and be it

RESOLVED FURTHER, That a copy of this resolution be forwarded to the Board of Trustees of the American Medical Association, to the Council on Medical Service and Public Relations, to the state associations which are members of the North Central Conference and to the National Conference on Medical Service and, further, that this resolution be introduced to the House of Delegates of the American Medical Association at its next annual meeting.

†Passed by the North Central Conference on Sunday, January 9, 1944

MATERNAL AND INFANT CARE FEES ARE DIFFERENT

The current Children's Bureau program for obstetric and pediatric care for wives of infants of enlisted men occupied a considerable share of discussion time at the North Central Conference.

Six states were represented and there were

almost as many variations in their individual agreements with the Children's Bureau as there were states represented. Maximum fees approved under the program varied from $35 in Iowa to $50 in South Dakota and Nebraska for identical services, depending perhaps, as one delegate put it, on what kind of horse traders state health and medical association officials in the various states turned out to be. It developed, indeed, that bureau representatives had assured all of them that they were receiving the maximum allowed under the regulations. The Minnesota allowance is now $40 for complete obstetrical care under the plan. But steps will be taken immediately, on the basis of reports made at this Conference, to increase the maximum here to $50.

Only State to Refuse

North Dakota was the only state among the six and, in fact, the only state in the entire United States which has as yet, reached no agreement either with state health officials or physicians for operation of the plan. Thus no soldiers' wives or babies in North Dakota are getting the benefit of federally financed obstetric and infant care. At the same time, North Dakota doctors are making it a point to see that no soldier's wife or baby goes without medical service, while rejecting the Children's Bureau program.

The situation in North Dakota is peculiar in that only one hospital in the entire state is able to conform to all Children's Bureau requirements. Under bureau regulations, furthermore, medical service is linked with hospital service for obstetrical cases and if arrangements were made to pay for either service under the plan, separately, the other service would have to be given gratis. The opposition of the North Dakota State Medical Association has been loyally backed up by its State Board of Health and is being continued in spite of protests from the Farmers' Union and other organizations. Other states in this area will watch with great interest the progress of the North Dakota controversy.

Principles Unsound

All Conference spokesmen agreed that the principle upon which the program is based is unsound and that the way is being paved, perhaps, for more extensive future programs. In this instance, the program was formulated without benefit of medical advice and so presented that most medical associations and health departments felt they could not refuse to coöperate lest they lay themselves open to a charge of unpatriotic behavior.

The wide range of fees paid showed conference members that arrangements for an exchange of information on such matters, at least between states in this area, might be of great advantage to all. One of the important accomplishments of the 1944 session was therefore a definite understanding among them by which information on all such matters of mutual importance can be speedily exchanged.

GOVERNMENT HEALTH INSURANCE SEEN AS ISSUE FOR 1944

Evidence is piling up to the effect that federal health and hospital insurance will be a political issue in the next presidential campaign.

Congress has taken no action on the Wagner-Murray-Dingell Bill and is said to be unlikely to do so at this session. But the Social Security Board, in its eighth annual report to Congress, has for the first time openly recommended federal insurance to cover doctor and hospital bills and the President has publicly affirmed his desire to strengthen and round out the Social Security program. It is to be expected that the President's program will be identical with the program proposed by his appointee, Arthur J. Altmeyer, head of the Social Security Board, whose report was nicely timed to follow, within a few days, the President's message to Congress.

No Surprise

In view of these events, the warning by Representative Day, republican member of Congress from Illinois, that federal health insurance will be a "major plank in President Roosevelt's fourth term platform," as quoted in a dispatch from the Associated Press, is interesting but hardly a matter for surprise.

At the same time, members of Congress are showing themselves to be extremely sensitive to any charge of favoring "socialized medicine," so-called, an aspect of the whole situation in which physicians and others who are opposed to extension of government into care of the sick, may perhaps take comfort and encouragement.

Congress Fears It

It is a fact that members of both the Senate and the House vie with each other, these days, to give expression to their fear of socialized medicine whenever any legislation with a flavor of federal aid in the distribution of medical service comes up. The attempt to secure an appropriation to help meet the problem of relocating physicians in shortage areas is a case in point.

In this instance, representatives of the American Medical Association, the Procurement and Assignment Service and the United States Public Health Service all backed a measure, introduced by the public health service, requesting funds for the Surgeon General of the public health service to authorize assignment of medical and dental personnel of the public health service to critical shortage areas. At the same time, permission was also sought to enter into agreements with private practitioners who might be willing to move to these areas, in consideration of a relocation allowance to be paid for three months together with travel and transportation expenses for their families and household effects.

In spite of such reassuring backing, however, debates on the measure in both houses expressed the fear that "providing direct medical attention to the civilian population with physicians paid by the Federal government" smacked of socialized medicine and appropriations were refused.

The plan to send salaried personnel of the public health service to shortage areas was accordingly dropped; but the second part of the original proposal which called for an appropriation of $345,000 to provide relocation allowances and travel expenses was introduced by itself, as an amendment to a deficiency bill, by Senator Richard B. Russell of Georgia. This amendment was eventually passed by the Senate, though not without another lively exchange between the senators on the danger of socialized medicine, also a ringing disavowal of any such heresy by Senator Russell.

Amendment Passed

After a conference between House and Senate committees, the amendment finally emerged with the appropriation reduced from $345,000 to $200,000 to be used, briefly, as follows: the community in need of aid must make application to the public health service and must pay 25 per cent of the $250 allowed monthly for three months to the relocating physicians, also 25 per cent of the expense of moving and travel for the practitioner and his family. The doctor or dentist who is thus relocated, must promise to remain at least for one year and he must be licensed to practice under the laws of the state involved.

It is clear, in any case, that Congress is wary. The term, socialized medicine, is already a political challenge and promoters of federal health and hospital insurance will have to show a solid backing from the voters before this Congress, at least, will risk any radical reshaping of traditional methods of practice.

Alternative Needed

Physicians, especially, who oppose government control of private practice, will seriously fail in their obligations if they do not take advantage of this situation. They must not only inform members of Congress of their opposition and why, but they must also be prepared to arm Congress with a sound and well-considered policy for the improvement of all health services in the United States which can be advanced as an alternative to administration proposals for government care of the sick.

A FRIENDLY ADMONITION CONCERNING MEDICAL TESTIMONY

Three years ago the Minnesota State Medical Association created a Committee on Medical Testimony. The function of this committee is to investigate complaints made by judges and others concerning medical testimony. The need for such a committee was stressed by eminent jurists and others in the State of Minnesota. It was pointed out that every so often a case, civil or criminal, is heard in Court in which the medical testimony is so conflicting that it is of little benefit to the court or jury or both. Generally speaking, there are two kinds of medical testimony: the first being testimony as to the facts in a given case. The second is opinion testimony applicable to the facts or arising therefrom. Factual testimony, as a rule, occasions little difficulty. Opinion testimony creates the problem.

An absolute inability to harmonize opinion testimony in a given case does not necessarily mean that one or more witnesses have testified falsely. It may mean that, or what perhaps happens more frequently, it may indicate that

one or more witnesses have failed to properly evaluate the facts before expressing the opinion.

This Board has had occasion to investigate a complaint referred to it by the Committee on Medical Testimony concerning the testimony given by a physician as an expert witness for a defendant charged with murder. The Committee on Medical Testimony came to the conclusion that the physician's testimony was unjustified. This Board after a careful investigation of the matter came to the same conclusion and censured the physician. In fairness to the physician concerned, it must be stated that the Board was convinced that neither perjury nor monetary gain were factors in the giving of the testimony. It is interesting to note that in the trial nine physicians were called as witnesses. Only one testified that the defendant was suffering from a named physical or mental ailment. The trial court refused to follow the testimony of this physician but accepted the testimony of the others and found the defendant guilty on four counts of murder. An appeal was taken to the Supreme Court where the trial court was upheld. Here again we note that the Supreme Court commented on the fact that none of the other expert witnesses agreed with the opinion expressed above.

When the case was before this Board, we stated:

"This Board is of the opinion that no physician has a right to practice medicine just as he pleases, nor to testify in court in a similar fashion. We believe that a physician's testimony should be based upon a factual background that has been carefully scrutinized by the physician before he expresses his opinion. This opinion should be reasonable and surrounded by every mark of truthfulness and sincerity. Under those circumstances the opinion is of value to courts and juries alike. The scrutiny required is all the greater where the defendant is on trial for murder and the history of any physical or mental abnormalities is furnished by the defendant or someone close to him."

Next to saving life and giving aid to the sick and injured, no greater responsibility devolves upon the medical profession than giving testimony in court or elsewhere. In many cases, as in the case referred to, the decision rests, primarily, on medical testimony. Without it, courts and juries would be unable to function. In the discussions that led to the creation of this committee, we were advised that in the great majority of cases no criticism could be made of the medical testimony. It is the exceptional case that we should strive to eliminate. We must also remember that the right of a physician to continue in the practice of medicine is measured, not only by his competency as a physician, but also by what he says and does as a physician.

These few words of friendly advice are not intended to portray the wisdom of Solomon, for they apply to us as well as to others, but rather to emphasize that the courts and other quasi-judicial bodies of this state, our neighboring states and the public as well, are rightfully entitled to accuracy, honesty, fairness, modesty and tolerance from physicians who are called upon to testify.

JULIAN F. DUBOIS

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary

MINNEAPOLIS PHYSICIAN'S LICENSE REVOKED IN CANCER CASE

Re the Revocation of the License of Walter D. Hammond, M.D.

The Minnesota State Board of Medical Examiners, following a hearing on December 16, 1943, revoked the medical license of Dr. Walter D. Hammond, 106 Washington Ave. So., Minneapolis.

Late in June, 1943, the State Board of Medical Examiners was requested to investigate the circumstances surrounding the diagnosis and treatment of one Ernest Anderson, twenty-seven years of age, of Hastings, Minnesota. It was claimed that Ernest was critically ill of a malignant teratoma of the testicle, and that for twenty-two months prior to that time, had been a patient of The Health Institute, 106 Washington Ave. So., Minneapolis. It was also alleged that the diagnosis made at The Health Institute was "hydrocele" and that Ernest had paid over $1,000 in fees including $485 for 900 capsules containing some unknown medication. Mr. Brist, representing the State Board of Medical Examiners, was advised that there was only a slight chance that Ernest would live until the next regular meeting of the Medical Board. In view of that fact Mr. Brist obtained an order from the Hon. W. A. Schultz, Judge of the District Court of Dakota County, to take Ernest's testimony forthwith. Ernest testified that he went to The Health Institute in September, 1941, because he noticed an enlargement of his testicle, and that he was examined there by Dr. Hammond. He further testified that two unlicensed individuals, A. A. Morgan and C. C. Morgan, at The Health Institute, made a diagnosis of "hydrocele." Ernest further stated that this condition was treated by the external application "of cotton with some fluid on it" and the application of heat. Ernest also testified that he paid the Morgans $1,250, which included $485 for capsules that were charged for at the rate of $55.00 per hundred for the first 700, and $50.00 a hundred for 200. According to Ernest's testimony he went to The Health Institute twice a week for over a year and once a week for six or seven months. Early in June, 1943, Ernest placed himself under the care of a Hastings physician and was operated on June 14 for a malignant teratoma of the testicle. Through the coöperation of Ernest's physi-

cian at Hastings, the Superintendent and Medical Staff of the University Hospital, Ernest was admitted to the latter institution on July 28, 1943, where he remained until his death on August 24. The cause of death was given as malignant teratoma of the testicle with pulmonary metastasis.

Dr. Hammond was charged with "immoral, dishonorable, and unprofessional conduct" in that he permitted two unlicensed individuals, A. A. Morgan and C. C. Morgan, associated with him in the practice of medicine, to examine, diagnose and render treatment to Ernest. Dr. Hammond was also charged with having failed to take the necessary and proper steps to correctly diagnose the ailment and with failing to render proper treatment for the condition. It was also alleged that "a grossly exorbitant fee of approximately $1,250" was charged Ernest, including $485 for "capsules which were of no value whatsoever" in the treatment of cancer. It was also alleged that because of the unlawful and dishonorable conduct on the part of Dr. Hammond "every chance for the ultimate recovery" of the patient was destroyed. At the hearing Dr. Hammond admitted that he had examined Ernest but denied making a diagnosis of "hydrocele." He also claimed that he had seen Ernest on only one occasion. Dr. Hammond admitted that he had been associated, for a number of years, with the two Morgans, but disclaimed responsibility for their acts. Dr. Hammond further testified that he neither owned The Health Institute nor did he pay rent for the space occupied by him. On cross-examination Dr. Hammond admitted that he received as compensation only such share of the proceeds of The Health Institute as was allotted to him by the Morgans. Dr. Hammond was found guilty of the charge by the unanimous vote of the Board and his license as a physician was ordered revoked. During the investigation, and prior to the hearing, A. A. Morgan committed suicide.

Dr. Hammond was born at Covington, Kentucky, in 1879, and graduated from the Illinois Medical College in 1900. He was licensed by examination in Minnesota in 1901.

MINNEAPOLIS DRUG ADDICT ORDERED COMMITTED TO GOVERNMENT HOSPITAL

Re: United States of America vs. Albred K. Scherf

On January 11, 1944, Alfred K. Scherf, fifty-four years of age, 810 Russell Ave., No., Minneapolis, was ordered by Judge M. M. Joyce of the United States District Court to be taken by the United States Marshal to the Government Hospital for narcotic addicts at Lexington, Kentucky. Scherf was indicted on December 30, 1943, by a Federal Grand Jury for forging physician's prescriptions for narcotic drugs. He pleaded guilty on January 10, 1944. The evidence disclosed that Scherf had obtained a number of prescription blanks of a north side Minneapolis physician, without the knowledge of the physician, filled in the prescriptions and signed the physician's name to them. Following this, Scherf had the prescriptions filled at four Minneapolis drug stores, obtaining 42 1/16 gr. dilaudid tablets.

Scherf received a ninety-day sentence in the Minneapolis Workhouse on June 15, 1939, for violating the Minneapolis City Narcotic Drug Ordinance. On September 25, of the same year, he received a sixty-day workhouse sentence for vagrancy.

LICENSE OF MINNEAPOLIS PHYSICIAN REVOKED

Re the Revocation of the License of O. H. Bakke, M.D.

On December 16, 1943, following a hearing, the Minnesota State Board of Medical Examiners revoked the license to practice medicine formerly held by Dr. O. H. Bakke, 2117 Kenwood Parkway, Minneapolis. Dr. Bakke's license had been suspended on April 10, 1943, for a period of five years for issuing 136 fictitious narcotic prescriptions to four individuals. Notwithstanding the fact that Dr. Bakke had no lawful right to continue to practice medicine, an investigation by the Federal Bureau of Narcotics and the Minnesota State Board of Medical Examiners disclosed that Dr. Bakke was continuing to practice medicine from his home and had issued four narcotic prescriptions to one G. F. Lambert, between October 24, 1943, and November 1, 1943. There was also evidence that Dr. Bakke, three days before the Board hearing, issued a narcotic prescription to another individual.

Dr. Bakke was born in 1872 at Kenyon, Minnesota. He graduated from the Medical School at Hamline University in 1896 and was licensed to practice medicine in Minnesota the same year.

GUIDANCE CLINIC TO CONTROL ALCOHOLISM

A new step toward control and prevention of habitual drunkenness, both now and after the war, is being taken, it appears from an announcement by Yale University.

The announcement is of the opening next month of a diagnostic and guidance clinic for inebriates, first of the kind in this country. The clinic and a similar one to be opened soon in Hartford, Conn., are sponsored jointly by the Yale Laboratory of Applied Physiology and the Connecticut Prison Association.

Dr. Howard W. Haggard of Yale will be in general charge with Dr. Ralph Banay, psychiatric consultant of the New York State Parole Board and former chief psychiatrist of Sing Sing prison, serving as medical director.

A staff of psychiatrists, psychologists and social workers will study each patient, determine his type and the kind of treatment he requires, and arrange to use the existing resources of the community for his treatment and rehabilitation. Representatives of Alcoholics Anonymous and the Salvation Army and a legal consultant will be on call for assistance.

Serious as the problem of alcoholism is today, it is feared that after the war it will become much worse. It is hoped, therefore, that the clinics may serve as experimental models for similar ones to be set up in other states.—*Science News Letter*, January 15, 1944.

✦ Reports and Announcements ✦

MEDICAL BROADCAST FOR FEBRUARY

The following radio schedule of talks on medical and dental subjects by William A. O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, Minnesota Hospital Association and University of Minnesota School of the Air:

February 2—11:00 a.m.	(WLB)	Nutritional Disorders
February 5— 9:15 a.m.	(WCCO)	Venereal Disease Control
February 5—11:30 a.m.	(WLB-KROC)	Medicine in the News
February 9—11:00 a.m.	(WLB)	Body Weight and Health
February 12— 9:15 a.m.	(WCCO)	Amebiasis
February 12—11:30 a.m.	(WLB-KROC)	Medicine in the News
February 16—11:00 a.m.	(WLB)	Care of the Teeth
February 19— 9:15 a.m.	(WCCO)	Atypical Pneumonia
February 19—11:30 a.m.	(WLB-KROC)	Medicine in the News
February 23—11:00 a.m.	(WLB)	Diseases of Teeth and Gums
February 26— 9:15 a.m.	(WCCO)	Sore Mouth
February 26—11:30 a.m.	(WLB-KROC)	Medicine in the News
February 28— 4:30 p.m.	(WCCO)	Your Hospital in Wartime—The Nurse

AMERICAN COLLEGE OF SURGEONS

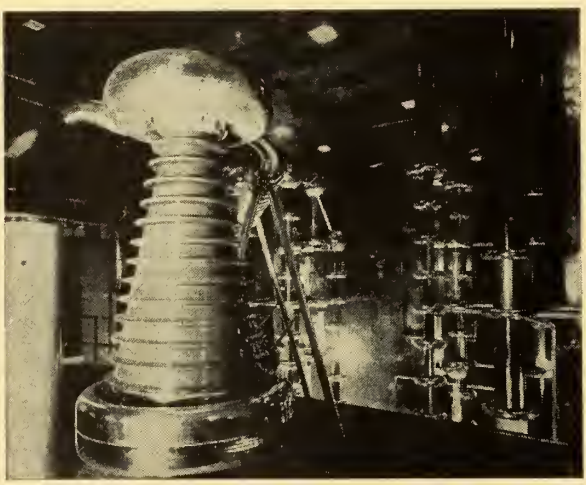
Minneapolis will be one of twenty-two cities in the United States and Canada selected by the American College of Surgeons for one-day War Sessions to be held in March and April, 1944. Advancements in military medicine and developments in civilian medical research and practice will be presented by representatives of governmental agencies such as the Army, Navy, Public Health Service, Veterans Administration, and by civilian physicians and surgeons.

Experiences of medical officers who have been on active duty in combat zones will be specially featured. The meeting will be open to the profession at large including medical officers of the Army and Navy, residents, interns, medical students, and executive personnel in hospitals. The Minneapolis meeting will open at 8:20 a.m., March 2, 1944, at the Hotel Nicollet.

UROLOGY AWARD

The American Urological Association offers an annual award "not to exceed $500" for an essay (or essays) on the result of some specific clinical or laboratory research in urology. The amount of the prize is based

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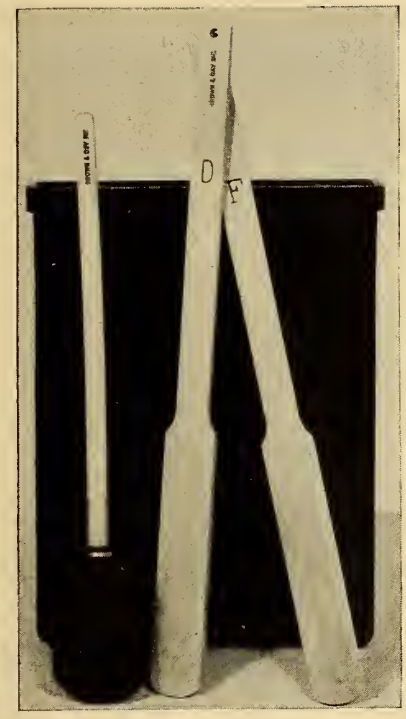
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on the merits of the work presented, and if the Committee on Scientific Research deem none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years. All interested should write the Secretary, for full particulars.

The selected essay (or essays) will appear on the program of the forthcoming meeting of the American Urological Association, June 19-June 22, 1944, Hotel Jefferson, St. Louis, Missouri.

Essays must be in the hands of the Secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee, on or before March 15, 1944.

REFRESHER COURSE IN OTOLARYNGOLOGY

The Department of Otolaryngology of the University of Illinois College of Medicine announces its spring refresher course, to be held at the College in Chicago, March 20 to 25, inclusive, 1944. The course will be largely didactic, but some clinical demonstrations have been included. It is intended primarily for specialists, who, under existing conditions, are able to devote only a brief period to postgraduate review study. The fee is $50.00. Registration will be limited. In letter requesting application, state school and year of graduation; also give details concerning specialty training and experience. Address—Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago, Illinois.

CLAY-BECKER MEDICAL SOCIETY

Dr. V. D. Thysell of Hawley was elected president of the Clay-Becker Medical Society at the annual meeting held in Detroit Lakes in December. Other new officers are: Dr. A. R. Ellingson, Detroit Lakes, vice president: Dr. Carl Simonsen, Barnesville, secretary-treasurer.

GOODHUE COUNTY MEDICAL SOCIETY

Officers of the Goodhue County Medical Society for the coming year were elected at the annual meeting held at Red Wing as follows: President, Dr. R. F. Hedin, Red Wing; vice president, Dr. M. R. Williams, Cannon Falls; secretary-treasurer, Dr. James Brusegard, Red Wing. Dr. Hedin was named delegate to the State Association convention with Dr. H. T. McGuigan, Red Wing, as alternate.

Of the twenty-four members of the Society, six are now reported in service, leaving an active membership of eighteen. The most important work of the Society during the past year was the establishment of a blood bank in Red Wing, one of the few communities of its size to have such a setup.



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RED RIVER VALLEY MEDICAL SOCIETY

Dr. C. H. Holmstrom of Warren was elected president of the Red River Valley Medical Society at the annual meeting held in Crookston in December. Dr. C. L. Oppegaard of Crookston was reëlected secretary-treasurer.

WASECA COUNTY MEDICAL SOCIETY

The annual business meeting of the Waseca County Medical Society was held at Waseca in December with the following chosen to serve in 1944: President, Dr. Clifford Wadd, Janesville; vice president, Dr. H. M. McIntire, Waseca; secretary-treasurer, Dr. S. C. G. Oeljen, Waseca.

WATONWAN COUNTY MEDICAL SOCIETY

Dr. E. J. Bratrude of St. James was elected president of the Watonwan County Medical Society at the annual meeting held late in December at St. James. Dr. B. H. Grimes of Madelia was elected secretary-treasurer.

WINONA COUNTY MEDICAL SOCIETY

The annual meeting of the Winona County Medical Society was held at the Hotel Winona in January. Officers elected to serve for the coming year are: President, Dr. Victor J. F. Bruder; vice president, Dr. Herbert Heise; secretary, Dr. A. E. Meinert; treasurer, Dr. R. H. Wilson, all of Winona.

Classified Advertising

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WOMAN'S AUXILIARY

Mrs. F. S. McKinney, *President*
Minneapolis, Minnesota
Mrs. J. R. Aurelius, *Publicity Chairman*
Saint Paul, Minnesota

The midwinter board meeting of the Auxiliary to the Minnesota Medical Association will be held at the St. Paul Athletic Club on February 11 at one o'clock. The president, Mrs. F. S. McKinney, urges all county chairmen of the War Service and Emergency Nursing Committees to attend this meeting with their county presidents.

Speakers will be Miss Thelma Dodd and Louise Wagen Weller who are recruitment chairmen for the Minnesota State Nurses Association. Mrs. Von der Weyer and Mrs. Mark Ryan of St. Paul are in charge of the luncheon arrangements.

WASECA COUNTY

Tuesday evening, January 4, the doctors of the Waseca County Medical Society and their wives met at the home of Dr. and Mrs. B. J. Gallagher.

The men proceeded with their annual meeting while their wives welcomed Mrs. F. S. McKinney of Minneapolis who had come to help them organize as an auxiliary.

Mrs. S. C. Oeljen was elected president, Mrs. H. M. McIntire, vice president and Mrs. B. J. Gallagher, secretary-treasurer.

Their aims are to assist in the war service program adopted by the State Auxiliary and to sew for, and serve the Waseca Hospital in any way necessary.

CLINICAL-PATHOLOGICAL CONFERENCE

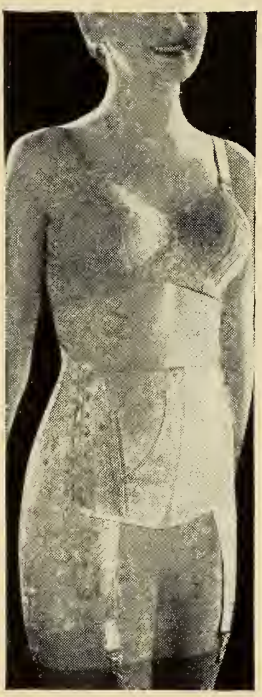
(Continued from Page 129)

treatment is no contradiction to the use of sulfonamides when these are indicated. Such a leukopenia may be the result of the underlying infection. However, the white blood count must be constantly followed throughout the course of treatment, and sulfonamides discontinued if a fall in white blood count occurs.

A few other symptoms of sulfonamide toxicity may be mentioned without further discussion. These include joint pains, conjunctivitis, myopia, optic neuritis and thrombocytopenic purpura. Although not commonly seen, such symptoms must be constantly remembered in any case receiving sulfonamide therapy.

Summary—The toxic effects of sulfonamide therapy must be constantly kept in mind whenever the drugs are administered. Such toxic effects are frequent enough and serious enough to preclude the indiscriminate use of sulfonamides.

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Of General Interest

Dr. L. S. Nelson, formerly of the Adams Clinic, Hibbing, Minnesota, is now in the Armed Forces, at present being stationed at Camp Blanding, Florida.

* * *

Dr. J. P. Nehring of Preston has opened a hospital there. Announcement has not been made as to whom he will place in charge.

* * *

Dr. Edmund Miller, formerly of St. Peter, has been appoionted acting superintendent of the Anoka State Hospital, succeeding Dr. W. P. Gardner, now of Saint Paul.

* * *

Dr. William P. Standard has recently moved from Rochester, Minnesota, to Macomb, Illinois, where he will be associated in practice with his father, Dr. A. P. Standard.

* * *

Memorial Hospital, at Milaca, Minnesota, which opened in October, 1941, was closed January 1, 1944, for an indefinite period because of wartime conditions and labor shortages.

* * *

Dr. Frederick P. Army of Preston, now serving overseas as a flight surgeon in the air evacuation branch of the medical corps, recently received promotion from Captain to Major.

* * *

Dr. Alfred W. Adson of Rochester spoke in the Milwaukee Auditorium on January 14 on the Wagner-Murray-Dingell Bill at a public meeting held by the Medical Society of Milwaukee County.

* * *

Dr. C. A. Saffert of New Ulm was elected president of the staff of Loretta Hospital at the annual meeting held in January. Dr. H. A. Vogel was elected vice president, and Dr. T. H. Fritsche, secretary.

* * *

Major Carlos C. Craig, base surgeon at the army air base in Rochester, Minnesota, assumed duties at the Mayo Clinic in January. He has been in Rochester since February, 1943, at the time the air base was formed. His family, who had remained in Grand Island, Nebraska, the past year, have now joined Major Craig in Rochester, where they will make their home.

Dr. Walter P. Gardner, formerly superintendent of the State Hospital at Anoka, Minnesota, is now associated with Dr. William H. Hengstler in the practice of Neuropsychiatry with offices at 1068 Lowry Medical Arts Building, Saint Paul.

* * *

Dr. Vincent Ryding, formerly of Lindsborg, Kansas, has located at Starbuck, Minnesota, for the practice of medicine. Dr. Ryding, a graduate of the Kansas State Medical School, served his internship at Swedish Hospital in Minneapolis.

* * *

Dr. Paul F. Hausmann recently completed his surgical training as a Fellow in Surgery and assistant to the surgical staff at the Mayo Clinic and has established an office for the practice of general surgery in Milwaukee, Wisconsin.

* * *

Lt. Col. George A. Williamson is at present chief of the Surgical Service at the DeWitt General Hospital at Auburn, California. This hospital is in the process of completion for use as a surgical hospital and amputation center and will have a capacity of 1,730 beds.

* * *

Dr. J. C. Vezina of Mapleton was elected president of the Immanuel Hospital staff at Mankato at the annual dinner meeting held in January. Dr. Roger Hassett of Mankato was elected vice president, and Dr. F. W. Franchere of Lake Crystal, secretary.

* * *

Dr. J. M. Hayes has recently announced the opening of offices in Los Angeles and Pasadena for the practice of medicine. He makes his home in Monrovia, California, with office hours divided between the Los Angeles and Pasadena locations.

* * *

Dr. J. E. Halpin of Rush City was elected president of the East Central Medical Association at the December meeting in Cambridge. Mrs. W. F. Nordman of Mora, wife of the retiring president of the Association, was elected president of the Woman's Axiliary.

* * *

Dr. Burton A. Orr, of Faribault, a graduate of the University of Minnesota Medical School in the December 16 class, will serve for nine months as an intern

(Continued on Page 154)

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in a Detroit, Michigan, hospital, after which he will become active as a First Lieutenant in the Medical Corps of the U. S. Army.

* * *

Dr. Charles Anderson Aldrich, formerly chief of staff of the Children's Memorial Hospital, Chicago, and professor of pediatrics at Northwestern University, has joined the staff of the Mayo Clinic, Rochester, as a member of the section on pediatrics.

* * *

Dr. R. J. Moe, Duluth, was elected chief of staff of Miller Memorial Hospital at the annual meeting held in January. He succeeds Dr. P. G. Boman. Other staff officers elected are: Dr. L. A. Barney, vice chief; Dr. A. J. Spang, secretary-treasurer; Dr. McHaffie and Dr. Boman, executive committee members.

* * *

Dr. F. A. Olson of Minneapolis has taken a leave of absence to become associated with Dr. W. A. Morrison, chief of the medical staff of the Santa Fe Railway, during the war emergency. He will be a member of the surgical staff of the Santa Fe Hospital in Los Angeles, California.

* * *

The St. Cloud Hospital staff at its regular meeting in December elected the following to office for the coming year: Dr. Charles S. Donaldson of Foley, president; Dr. Everett J. Schmitz of Holdingford, vice president; Dr. Leonard A. Veranth of St. Cloud, secretary.

* * *

Dr. Zondal Miller, who completed his medical course at the University of Minnesota, December 16, 1943, was one of six students in his class to be granted a naval internship. He was commissioned a junior grade lieutenant the following day and began his services at the Naval Base Hospital at Long Beach, California, soon afterwards. Before leaving for the coast he was married to Miss Esther Singer of Saint Paul.

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Dr. Ludwig Lima, Jr. of the University of Minnesota Health Service has moved to Montevideo, Minnesota, to join his father, Dr. L. R. Lima, in the practice of medicine. Mrs. Brunhild Brown, sister of Dr. Lima, will act as office nurse for her brother, having recently completed her course in nurse's training at University Hospitals.

* * *

The new Deer River Hospital at Deer River, Minnesota, was opened the first of the year and is now in operation. The structure is 22 feet wide by 85 feet long, with offices and consultation rooms on the first floor and patients' rooms and operating room on the second floor. Dr. George Miners and Dr. H. R. Anderson are proprietors of the hospital.

* * *

Dr. George T. Ayres of Ely retired from practice, December 31, 1943, having served as a member of the staff of the Shipman Hospital at Ely since September 1, 1899. Dr. Ayres' retirement also dissolved his partnership with Dr. H. N. Sutherland, with whom he was associated as proprietor of the Shipman Hospital. His interest in the hospital has been taken over by Dr. Jack P. Grahek.

* * *

Dr. G. K. Wharton, of London, has recently accepted a professorship in clinical medicine at Queen's University, Kingston. Dr. Wharton has been on the staff of the medical school at the University of Western Ontario, on the staff of Victoria and St. Joseph's Hospitals, and a consultant at the Ontario Hospital for most of his twelve years' residence in London. Dr. Wharton was a fellow in medicine in the Mayo Foundation from January, 1929, until January, 1932. He received the degree of M.S. in medicine from the University of Minnesota in 1931.

* * *

Lieutenant Ferrall H. Moore, MC, USNR, has been awarded the Legion of Merit according to the "Bureau of Naval Personnel Information Bulletin" December, 1943, No. 321.

". . . As medical officer in charge of the evacuation of casualties at Henderson Field, Guadalcanal, from 30 November 1942 to 4 February 1943, Lieutenant Moore instituted a plan which facilitated the loading and evacuation of patients. His efficiency in handling aircraft flight crews, sick, and wounded made possible the transfer of several hundred men to base hospitals by air without a fatality en route."

Lieutenant Moore was a fellow in medicine in the Mayo Foundation from October, 1936, until January, 1938.

* * *

During the weeks of allied offensive on Tarawa and the Gilbert Islands many of the wounded men were brought back to the Old Navy Hospital at Pearl Harbor where they received surgical treatment by a Minnesota physician, Lt. (sg) H. B. Neel, formerly of Albert Lea. Dr. Neel left Albert Lea in October, 1942,



to be with the USNR Medical Corps at Bremerton, Washington, where he was a member of the surgical staff of the U. S. Naval Hospital in the urology division, later going to Santa Barbara and thence to the Hawaiian Islands. Dr. Neel returned to Albert Lea for a short leave the latter part of December and is now serving on a hospital ship plying the waters of the Pacific.

* * *

Dr. Leverett D. Bristol, executive director of the Hospital Council of Greater New York, has been appointed chairman of the Health Advisory Council of the U. S. Chamber of Commerce. Dr. Bristol graduated in medicine at Johns Hopkins University and obtained his degree in public health from Harvard. He first practiced medicine in Saint Paul, was Professor of Bacteriology at the University of Syracuse and the University of North Dakota, was Fellow and Assistant at the Harvard Medical School and State Commissioner of Health for Maine. He was also Professor of Preventive Medicine and Public Health at the University of Minnesota and was Health Director of the American Telephone and Telegraph Company from 1929 until December 1, 1943.

* * *

Lt. Colonel John M. Snyder, former fellow in the Mayo Foundation, has received a citation from Headquarters, North African Theater of Operations which reads:

"Under authority contained in Section IV, War Department Circular No. 131, dated 3 June 1943, the Legion of Merit is awarded in the name of the President to each of the following individuals: . . .

"John M. Snyder, 031691, Lieutenant Colonel, MC, . . . Surgical Hospital, for exceptionally meritorious conduct in the performance of outstanding services from 19 March 1943 to 8 April 1943. On many occasions Lt. Colonel Snyder, Chief of Surgical Service, worked unceasingly at the operating table until exhausted and then after only two hours of rest would continue his duties. The fidelity to his task and the calm and tenacious manner in which he performed his duties were a fine example and an inspiration to all with whom he came in contact. Lieutenant Colonel Snyder's performance of duties exemplifies the highest traditions of Military service . . ."

Dr. Snyder was a fellow in surgery in the Mayo Foundation from October, 1936, until March, 1941.

* * *

Dr. Arild E. Hansen, professor of pediatrics at the University of Minnesota, left in January to become professor and head of the Department of Pediatrics at the University of Texas. He will also be director of the Child Health program of the Buchanan Foundation of Texas. Dr. Hansen is the fourth staff member who has left the Department of Pediatrics at Minnesota to become head of a corresponding department in another university during the past three years. Dr. Chester Stewart is now at the University of Louisiana; Dr. Ralph V. Platou at Tulane University, and Dr. John A. Anderson at the University of Utah.



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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

MODERN MANAGEMENT OF COLITIS. J. Arnold Bargen, M.D., M.S., F.A.C.P. Chief of the Section on Intestinal Diseases, Division of Medicine, Mayo Clinic; Associate Professor of Medicine, Mayo Foundation, Rochester; Secretary American Gastroenterological Association; Vice Chairman Section on Gastroenterology and Proctology, American Medical Association. 322 pages. Illus. Price, $7.00, cloth. Springfield, Ill.: Charles C. Thomas, 1943.

ESSENTIALS OF DERMATOLOGY. Second Edition. Norman Tobias, M.D., Senior Instructor in Dermatology, St. Louis University, Assistant Dermatologist Fermin Desloge and St. Mary's Hospitals, Visiting Dermatologist St. Louis City Sanitarium and Isolation Hospital; Fellow American Academy of Dermatology and Syphilology; Diplomate, American Board of Dermatology and Syphilology. 497 pages. Illus. Price, cloth, $4.75. Philadelphia: J. B. Lippincott Co., 1944.

OFFICE TREATMENT OF THE NOSE, THROAT AND EAR. Abraham R. Hollender, M.Sc., M.D., F.A.C.S. Associate Professor of Laryngology, Rhinology and Otology, University of Illinois College of Medicine; Otolaryngologist, Research and Educational Hospitals, Chicago. 480 pages. Illus. Price, cloth, $5.00. Chicago: Year Book Publishers, 1943.

PSYCHOSOMATIC MEDICINE. Edward Weiss, M.D. Professor of Clinical Medicine, Temple University Medical School, Philadelphia; and O. Spurgeon English, M.D. Professor of Psychiatry, Temple University Medical School, Philadelphia. 687 pages. Price, cloth, $8.00. Philadelphia: W. B. Saunders Co., 1943.

HEALTH EDUCATION ON THE INDUSTRIAL FRONT. 1942 Health Education Conference of the New York Academy of Medicine. 63 pages. Price, cloth, $1.25. New York: Columbia University Press, 1943.

A TECHNICAL MANUAL FOR THE RESCUE SERVICE. U. S. Office of Civilian Defense. 142 pages. Illus. Price, paper cover, 20 cents. Washington, D. C.: U. S. Government Printing Office, 1943.

HEALTH OF CHILDREN IN OCCUPIED EUROPE. 36 pages. Price, 25c, paper cover. Washington, D. C.: International Labor Office, 1943.

NERVOUSNESS, INDIGESTION AND PAIN. By Walter C. Alvarez, M.D., Consultant in the Division of Medicine, Mayo Clinic, Rochester, Minn. 488 pp. Price $5.00. New York: Paul B. Hoeber, Inc., 1943.

This is a book that is definitely "different." It demonstrates why, in taking the history, examining and handling the patient, doing the laboratory tests, making the diagnosis and outlining the treatment, the nervous and mental system is not to be dealt with as a thing set apart and reserved more or less for the neurotic, psychoneurotic, and insane, but is an integral part of every patient. It illustrates how the function of the nervous and mental system, the psychology of the patient, affects and is affected by disease and disorders,

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particularly of the digestive tract. The mechanism of pain and its relation to various disorders is especially interesting and enlightening. It discusses many interesting, sometimes puzzling, yet common, clinical entities particularly in relation to the digestive tract which are not dealt with in most medical books, and offers many clever and practical suggestions in their diagnosis and treatment. To mention a few: the chronic dyspeptic, constiutional inadequacy, nervous breakdown, irritable bowel, flatulence, pseudoappendicitis, the post-cholecystectomy syndrome, nervous vomiting, migraine, poorly adjusted persons. The chapter on planning the examination is worth the price of the book.

The approach is not that of a neurologist or a psychiatrist but that of an internist and gastroenterologist who has attempted to synchronize and coördinate these various approaches to diagnostic and therapeutic problems.

It is most interestingly written in a narrative style, including at the beginning of each chapter many charming quotations from medical and classical literature. It is replete with pointed anecdotes gathered from the personal experiences of a long and active medical career. It is of a semipopular nature not too technical to be used as casual and entertaining reading, yet containing a wealth of information, clever diagnostic and therapeutic tricks and valuable suggestions to be used by the physician in his daily practice.

On the jacket of the book the publisher states that it is a book that the physicians could recommend to their patients. This practice does not always work out for the benefit of either the patient or the physician.

LLOYD L. MERRIMAN, M.D.

MEDICAL MALPRACTICE. Louis J. Regan, M.D. 256 pages. Price $5.00. St. Louis: C. V. Mosby Co., 1943.

The reading material of this book is devoted to the discussion of over 1,400 cases for suits for malpractice brought against physicians in this country. Toward the close of the book, the author lists these cases according to the states in which they took place. To this list, the state of Minnesota contributed forty-six cases. The author states that "six times as many patients sued their doctors in 1935 as in 1921." It would be of much help to every medical student to have a full knowledge of medical malpractice as this book presents the subject. It would also serve as a refresher course for those who have been in the practice of medicine for some time, although it would prove to be a poor substitute for a bedtime story. Failure to take the proper number of x-rays in case of fractures is a frequent cause of law suits; and the careless or unfriendly remarks of a second physician in a case has often served to give the patient an idea and a law suit has resulted. This volume is a worthy addition to any medical man's library.

A. G. SCHULZE, M.D.

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 March, 1944 No. 3

POTASSIUM THIOCYANATE IN HYPERTENSION

J. S. BLUMENTHAL, M.D.
and
MACNIDER WETHERBY, M.D.
Minneapolis, Minnesota

IT must be apparent to most of us that the methods of treatment of hypertension available to us today are unsatisfactory as far as reduction in blood pressure is concerned. Treatment medically is much the same as that in use twenty-five years ago[17,33] and the failure to change is certainly not due to its efficiency. Time after time we see the diagnosis of hypertension made and the notation immediately thereafter "no cardiac decompensation, no therapy indicated." The average patient with high blood pressure is told to go home and "take it easy." If he is at all apprehensive or has some symptoms of hypertension, he is given large amounts of phenobarital to help him do so. We then sit back and await the sequellae of the condition—cerebral accident in 19 per cent, renal failure in 9 per cent, myocardial failure and coronary disease in 61 per cent.[6] If the patient develops cardiac failure, we eagerly digitalize him realizing that here at least, we have a condition in which adequate therapy will be of unquestioned benefit. If a cerebral accident ensues, we assure the patient or his relatives that if he recovers from the initial attack, he will, no doubt, regain a large proportion of the faculties he has lost—and he will then surely "take it easier." We do not believe this is too harsh a résumé of the present medical treatment of high blood pressure in the average case.

From the Department of Medicine, University of Minnesota. Read before General Staff Meeting, University of Minnesota, April 9, 1943.

Prevelance of Hypertension and Prognosis

Another factor that needs emphasis is that hypertension is a common and a serious condition. Dr. Wetherby, in a study of 5,540 patients in our own department, gives what seems to me, some very interesting and even startling figures (Table I). Between the ages of 40 to 49, 23.36 per cent of the men and 55.67 per cent of the women had systolic blood pressure above 140 and 29.99 per cent of men and 40.26 per cent of women had a diastolic blood pressure of above 90 mm. of mercury. In a very recent article, Masters[35] states that 41 per cent of the male population of the United States and 51 per cent of the female population of the United States over forty years of age have a blood pressure of 150/90 or over.

The mortality from hypertension has been estimated in the United States at from 250,000 to 375,000 annually.[4] About one-fourth of all deaths past fifty years of life is referrable to hypertension[18]—two to three times the number of cancer deaths. Keith, Wagener, and Barker[27] have shown that the mortality varies from 30 to 98 per cent in a period of four years depending on the degree of hypertension. Among persons with a systolic blood pressure of 170 mm. of mercury, insurance statistics show a relation of actual to expected mortality of 219.6 to 100; with a systolic blood pressure of 200 the actual mortality is to the expected as 827.5 is to 100.[2,20] Many physicians are misled by the oc-

TABLE I. PERCENTAGE OF CASES ABOVE CERTAIN BLOOD PRESSURE LEVELS FOR MEN AND WOMEN IN THE TOTAL OUTPATIENT GROUP

Percentage Over	15-19 Years		20-29 Years		30-39 Years		40-49 Years		50-59 Years		60-69 Years		70 Years and Over	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
Systolic Blood Pressure														
140 mm.	4.64	6.31	9.86	8.48	14.74	18.21	23.36	55.67	39.73	65.16	57.47	75.95	72.22	89.39
150 mm.	1.48	1.05	2.94	3.01	4.84	10.33	12.38	40.89	26.31	50.50	42.88	66.82	61.90	78.78
160 mm.	0.74	0.34	1.26	1.10	2.61	5.87	7.12	32.24	18.63	38.03	34.38	56.45	46.82	68.17
180 mm.			0.21	0.41	1.40	3.07	2.99	21.55	8.50	19.22	15.36	34.04	28.56	42.40
200 mm.					0.40	1.30	1.84	15.42	4.66	9.52	7.68	13.71	9.52	24.21
Diastolic Blood Pressure														
90 mm.	5.18	7.36	16.44	15.60	24.85	24.03	29.99	40.26	38.34	50.70	46.15	62.66	46.83	69.73
100 mm.	1.48	1.05	2.10	1.92	4.85	6.09	8.48	16.83	16.70	24.17	27.12	34.45	30.96	45.48

casional patient that survives many years, for while hypertension is compatible with longevity[41] it is not conducive to it. Hypertension is a serious disease and fatal within a relatively short period of time.

It has at times been stated that hypertension per se may have little influence on the development of arteriosclerosis [13] and that the injurious effect on the vascular system may be due to a hypothetical noxious substance which causes hypertension; but most of us will agree, we believe, that "all pathologic changes in the disease can reasonably be explained as resulting directly from mechanical effects of a persistent elevated arterial tension acting on a vulnerable vascular system."[12]

Level of Hypertension

There has been a great deal of diversity of opinion regarding the exact level above which we should consider hypertension exists. More recently, general opinion has tended to place the normal blood pressure at lower levels. Whereas thirty years ago, Janeway and others regarded 160 systolic and 100 diastolic as hypertension, we now regard 140 and 90 as more nearly the true levels; and many would place it lower. The old rule of thumb of 100 plus the age is grossly inaccurate and if cases of hypertension are excluded, it would seem that blood pressure rises very little with advancing age. [47,42] The study made in 1939 by the Joint Committee of the Association of Life Insurance Directors and Actuarial Society of America [1] shows that levels above 140 systolic and 90 diastolic are abnormal at any age. For persons over forty, systolic blood pressure 35 to 44 mm. in excess increases expected mortality two and one-half times; and increased mortality is in direct proportion to the increased blood pressure. It would be reasonable to assume that even a moderate persistent reduction should retard degenerative processes.

Hypotensive Drugs

It is with these facts in mind that Dr. M. Wetherby and I decided to try some of the so-called hypotensive drugs in a hypertension clinic. We realized as do you, that many men have agreed with Mosenthal[35] when he recently summarized the effects of common methods of medical treatment of human hypertension with the statement "there are no means by which an elevated blood pressure can be appreciably and persistently lowered." We also realized, however, that some very capable observers have at times reported encouraging results with some drugs—the list is long—among them pentothal sodium, pentobarital sodium, choralosane, nitrites, mannitol hexanitrate, viscum album, allium sativum (garlic extract), extract of watermelon seed, sodium bromide, veratrum viride, acetyl choline, choline chloride, sodium chloride, nicotinic acid,

Biotin (vitamin H), vitamin A, and the cyanates.[36]

Various diets have been tried but with no apparent effect. Organotherapy in the form of pancreatic, liver, and, of course, kidney extract has been used. The very multiplicity of therapy speaks for itself; but most encouraging reports have come of the use of the cyanates and most recently, renal extract. In our present series, we have used vitamin A in twenty cases and potassium thiocyanate in seventy cases.

Vitamin A in the Treatment of Hypertension

At times hypovitaminosis of several of the vitamins has been reported as a possible factor in the causation of hypertension. There has been very little substantiating evidence but vast quantities of vitamins have been sold on this basis. Juan Govea-Peña and M. Villaverde[23,24,25] of Cuba have recently reported on the use of Vitamin A in large doses in hypertension. In our series, however, vitamin A in doses up to 200,000 international units daily for two weeks followed by 100,000 international units daily for six to twelve weeks did not have any significant effect on the blood pressure determination of these twenty hypertensive patients.[8]

Potassium Thiocyanate

Sulphocyanic acid is a synonym of thiocyanic acid, rhodan acid, sulphocyanates, sulphacyanids, thiocyanates, thiocyanids, rhodanates or rhodanids. The acid is unstable but the compounds are stable. It forms a large number of salts and has chemical relationship with various complex organic compounds especially the purine group. The alkaline salts, potassium, sodium, ammonium are most usually used. They are white crystalline substances saline in taste and very soluble in water and alcohol. Solutions turn to brilliant dark red by the addition of excess mercuric chloride. These changes do not take place if the mixture is markedly alkaline. This characteristic forms a very sensitive test—the reaction being well noted even in 1 to 100,000 solution of the cyanates. Normal saliva yields this reaction as does gastric juice and tears. The mode of fumation may be the result of katabolism of sulphur-containing proteins. The urine of persons taking cyanates turns a dark red on addition of ferric chloride which is only slightly different from the cherry red of diacetic acid.

Pharmacology of the Cyanates

Claude Bernard[7] in 1857 first reported the pharmacological observations on these drugs. Ingested cyanates are excreted by the kidneys very slowly. The urine does not become negative until two to three weeks after stopping the drug, suggesting accumulation in the system. They are also excreted in the saliva where they persist after the urine is free. The cyanates pass through unchanged and are not transformed in deadly hydrocyanic acid. Prolonged administration in animals of sub-lethal doses produces no harmful effects. In large doses, they are a powerful poison acting directly on the muscle, and in very large doses cause immediate cessation of heart action. In doses not immediately fatal, they cause marked diarrhea and intense stimulation of the motor cells of the cord production of tetanus and corrosion and hemorrhage of the gastric mucosa. The effect is due to the sulphonic radical and the lethal dose in a 70 kg. man would be 15 to 30 gm. at one dose though this varies greatly.

Potassium Thiocyanate in Hypertension

Pauli[40] in 1903, noted that blood pressure was reduced with use of cyanates. He also remarked about the sedative action of the drug on pain, and its possible action of removing calcareous deposits in arteries. LeRoy,[30] in 1908, thought the cyanates had a solvent and eliminative action on the earthly salts and advanced their use on this basis in degenerative conditions for eliminating calcareous deposits. Since that time many investigators have reported on the use of the cyanates in hypertension (Table II). A great advance in the treatment of hypertension with cyanates is the determination of cyanate concentration in the blood. Studies show a great individual variation in the absorption of the drug.[48] In 1929, the following simple technique as described by Schreiber[45] for determination of concentration of cyanates in the blood was offered so that adequate control of dosage could be obtained.

Pour 5 c.c. of 10 per cent trichlorocetic acid in a test tube, add 5 c.c. serum or plasma. Shake. Allow to stand ten minutes, filter, measure 5 c.c. filtrate, add 1 c.c. 10 per cent ferric nitrate. Mix, and read in a colorimeter with the standard solution set at 20 mm. choosing that standard which most nearly matches the unknown.

TABLE II—CLINICAL REPORTS

Author	Average Dose	No. of Cases	Results
Nichols[34]	5 grains three times daily	12	Effective in reducing blood pressure though with unpleasant side effects
Gager[21]	1½ grains three times daily	35	Blood pressure reduced in 32
Smith and Rudolf[46]	2½ grains twice daily to 5 grains three times daily	72	Response satisfactory in 61 cases
Palmer, Silver and White[35]	1½ grains three times daily	59	42% of the results were favorable
Logefeil[28]	5 grains three times daily	24	Blood pressure reduced in 21 cases
Fineberg[19]	1½ to 5 grains three times daily	58	37% of the cases showed a decline in blood pressure with smaller dose; with larger dose, 57% exhibited decline in blood pressure but with toxic signs
Maguire[29]	1½ grains three times daily	4	Blood pressure lowered and condition improved in all four
Borg[10]	2 to 10 grains three times daily	24	22 patients showed a decrease in systolic pressure but toxicity common
Saleeby[44]	1½ grains three times daily	88	Satisfactory results observed in 90% of cases
Ayman[3]	1½ to 3 grains three to five times daily	26	Large doses produced marked decreases in blood pressure but toxicity noted; small doses ineffective
Goldring and Chasis[22]	2½ to 25 grains daily	50	Effective in 31% of the patients but larger doses usually give toxic effects
Palmer[36]	1½ to 5 grains once to three times daily	35	Blood pressure reduced in 31%
Bolotin[9]	1½ to 5 grains three times daily	99	Improvement in 68.8% of women and 23.5% of men
Barker[5]	5 grains daily	246	Over a ten-year period roughly 47½% have responded to thiocyanate therapy. 76% benefited
Griffith and Lindauer[23]	5 to 15 grains daily	16	Improvement in 10 cases
Massie, Ethridge, & O'Hare[31]	3 to 12 grains daily	14	Lowering of blood pressure in every case; 12 patients reported marked symptomatic improvement
Doles[14]	2 to 7½ grains daily	300	Blood pressure lowered only in cases with macrocytosis
Doles[15]	2 to 7½ grains daily	10	Patients having macrocytosis showed satisfactory falls in blood pressure
Robinson and O'Hare[43]	3 grains two to three times daily	75	Average drops of 40 mm. systolic and 20 mm. diastolic occurred in 63% of the patients
Kurtz, Shapiro, and Mills[26]	3 to 21 grains daily	50	63% subjective improvement; 78% show reduction in blood pressure
William and William[49]	6 grains daily	6	6 fatal cases reported. Blood cyanate level of 15 to 20 mg. is critical

Barker, reporting on the use of potassium thiocyanate over a period of ten years, states a blood cyanate concentration of 8 to 12 mg. per 100 c.c. of blood will give the best sustained symptomatic relief and improvement in blood pressure without endangering the patient.[5]

Caviness, Bell and Satterfield[11] in 1941 using the Evelyn Photo-Electric Colorimeter with filter of wave length 440 mu and some modifications in technique report very interesting though as yet unconfirmed findings. Using 241 persons in two institutions under controlled conditions of diet, activity and environment, they found blood concentrations of sulphocyanates in normal individuals who had not taken any drug to be 50,000 times that of the nitrites; and to vary from 0.31 mg. to 2.55 mg. per 100 c.c. of blood. The average level was 1.20 mg. per cent. This concentration did not vary from week to week in twenty-nine persons on whom this was done. The mean variation was 0.14 mg. per cent with initial concentration from .36 mg. to 2.04 mg. per cent. On further investigation, they also found that the blood sulphocyanates, as they tested for them, varied in inverse proportion to the blood pressure. They concluded that the sulphocyanates are the most important natural depressor substances in the blood. If confirmed this would, of course, be extremely important.

There have been many reports on the toxicity of the cyanates, most of them before adequate control was used. The Council of Therapy of the American Medical Association in 1929 condemned the use of the cyanates and again in 1940 repeated that their use was dangerous.[16] The toxic symptoms are reported as weakness, depression, aphasia, anorexia, disorientation, anemia, dermatitis, and even death.[3,22,49] In almost all serious cases the blood cyanate level was allowed to rise above 12 mg. per cent or was not observed.

The daily dose given by the many investigators has varied but usually began with 1.5 to 6 grains with a gradual increase in dosage until either there was a satisfactory fall in blood pressure, toxicity developed, or no results were obtained in doses as high as twenty-five grains daily (Table II).

As shown in Table II, the results have varied. Thus Nichols reports the drug effective but with unpleasant toxic effects in doses of 15 grains a day. Gager reports reduced blood pressure in thirty-two out of forty-five cases on a daily dose of 4.5 grains. Smith and Rudolf show a satisfactory response in sixty-one out of seventy-two cases with a dosage of 5 to 15 grains daily. Logefeil reports twenty-one out of twenty-four cases of hypertension as having blood pressure reduced. Fineberg reports 37 per cent of cases showing a decline in blood pressure with 1.5 grains of potassium thiocyanate three times a day and 57 per cent with doses up to 15 grains a day but the larger doses gave toxic effects. Borg's work showed twenty-two of twenty-four patients with a lowered blood pressure on 2 to 10 grains three times a day but toxicity was frequent. Saleeby reports 90 per cent satisfactory results in eighty-eight patients. Ayman concluded in a study of twenty-six cases that large doses (15 grains daily) produced marked decrease in blood pressure but toxicity resulted; while small doses were not effective. Barker gives the most comprehensive and prolonged study and he reports 246 cases observed over a period of ten years. Of these, 47.5 per cent have responded to thiocyanate therapy while 76 per cent have benefited if he includes those with relief of symptoms and only minor reduction in blood pressure. William and William report on six fatal cases with a dosage of 6 grains daily but with a cyanate level above 15 mg. per 100 c.c. of blood. These authors have judged satisfactory results as being a reduction of 10 to 15 per cent in average systolic and diastolic blood pressure readings or an average drop in diastolic blood pressure of 20 mm. of mercury and an average drop in systolic blood pressure of 40 mm. of mercury.

TABLE III. PATIENTS RECEIVING POTASSIUM THIOCYANATE

Number of Patients	70
Males	18
Females	52
Age	18 to 78 years
Period of known hypertension	2 months to 12 years
Average period of known hypertension	5.4 years

Seventy cases of hypertension were treated with potassium thiocyanate for periods ranging from three to eighteen months. They were all ambulatory patients. As shown in Table III, the ages varied from eighteen to seventy-eight years. There were eighteen males and fifty-two females. The known period of hypertension was two months to twelve years with an average of 5.4

TABLE IV. RESULTS OF TREATMENT WITH POTASSIUM THIOCYANATE

Number of patients	70
Number of patients with symptoms of hypertension	58
Number of patients improved symptomatically	43
Number of patients who developed a rash	2
Number of patients with diarrhea and nausea	2
Number of patients with vomiting	1

years' duration. Major complicating diseases were diabetes in three, arthritis in ten, hypoplasia of right kidney in one, hydronephrosis in two, evidence of hypertensive or coronary heart disease in thirty-one. Other complications were glaucoma, skin cancer, obesity, cervical polyp, fibroids. Two had had bilateral sympathectomies. Systolic blood pressures taken after a period of rest ranged from 148 to 268 mm. of mercury with a mean of 192. Diastolic pressure ranged from 88 to 160 with a mean of 112. These patients were not selected except that no cases of decompensation, marked coronary, or renal damage were included. The great majority of them had had the usual treatment of hypertension including sedation, attempt at social adjustments, rest, cardiovascular support, vasodilators, et cetera.

Phenolsulphonephthalein, blood urea nitrogen and urine concentration and dilution tests were done on all patients in addition to the usual laboratory studies. Intravenous pyelograms were done with genito-urinary consultation on all these presenting the slightest reason to warrant study from that angle. All the patients were given the drug even if kidney function was poor but the dose was smaller and the patients were followed much more closely as the blood cyanate concentration increased very rapidly in those with poor kidney function. Most had electrocardiograms and orthodiagrams.

Method of Administration

The initial dose was three grains of potassium thiocyanate by mouth once daily. This dose was continued for one week. At the end of that time the blood cyanate concentration and blood pressure were determined. This procedure was done every week or two. If a sharp drop in blood pressure occurred or if toxic symptoms or severe weakness developed, the dosage was decreased. If the blood cyanate level had not reached 12 mg. per cent, if no blood pressure drop occurred and if no signs of toxicity were present, the dose was increased by three grains daily every

TABLE V. EFFECT OF TREATMENT

	Before KCNS	After KCNS
Systolic blood pressure range	148-268	118-250
Average systolic blood pressure	192	156
Diastolic blood pressure range	88-160	70-148
Average diastolic blood pressure	112	96
Number of patients		70
Number of patients with reduction of systolic and diastolic blood pressure of 15 per cent		32
Number of patients with reduction of systolic and diastolic blood pressure of 10 per cent		15

week or two until a drop did take place, the blood cyanate level did reach 12 mg. per cent or definite toxic symptoms developed. When the symptoms, blood pressure, dosage and blood cyanate level had been correlated to the best results possible, the patient was observed at one to three months' intervals. A level higher than 12 mg. per cent was lowered by decreasing the dose of the drug until the level was less. An attempt was made to keep the cyanate level as low as possible compatible with the well-being of the patient and lowering of the blood pressure. Tolerance to the drug has not developed.

Of the seventy patients treated with potassium thiocyanate, fifty-eight had symptoms usually associated with hypertension; headaches, dizziness, weakness, tinnitus. Of these fifty-eight, forty-three felt much better while under treatment. Too rapid a reduction in blood pressure often produced a marked feeling of weakness but for a few weeks only. Two developed a rash about the neck but this disappeared on withdrawal of the drug. Two had a severe diarrhea which ceased on reducing dosage. One had vomiting which ceased when potassium thiocyanate was stopped. On giving phenobarbital the drug was resumed with no further difficulty.

Taking the effect of thiocyanate on the whole series, the systolic blood pressure in this group dropped from a range of 148 to 268 mm. of mercury to 118 to 250; the diastolic from a range of 88 to 160 to 70 to 148 mm.; and the average systolic blood pressure dropped from 192 to 156 mm. of mercury. In judging improvement in blood pressure an average reduction of 15 per cent or more in the average of systolic and diastolic blood pressure for the period before thiocyanate was started was considered good. A reduction of 10 per cent or more was considered fair. On this basis, good response was obtained in thirty-two patients and fair in fifteen patients.

TABLE VI. BLOOD CYANATES AND DOSAGE

Range of Dose Daily	Average Dose Daily	Range of Blood Cyanate Level	Average Blood Cyanate Maintained
3 to 18 grains	7.2 grains	2.5 mg. to 11.6 mg.	6.9 mg.

The optimum blood cyanate level varied a great deal in different individuals and often in the same person at different times. This level ranged from as low as 2.5 mg. to 11.6 mg. per cent. The average of the group, judging on the basis of subjective and objective response in those who gave a satisfactory result, was 6.9 mg. per 100 c.c. of blood. Dosage varied a great deal and often in the same patient at different times ranging from 3 grains every other day to 18 grains daily. The average daily dose was 7.2 grains. Blood counts, urinalysis, and electrocardiograms showed no significant changes during treatment with this dosage.

On ten patients who gave response to treatment, placebos were given after a period of stabilization. Beyond change to the placebo, no other change was made in any procedure of treatment. Blood pressures were taken under the same conditions as during treatment with potassium thiocyanate. Placebos were then given for four to eight weeks. At the end of the four- to eight-week period, potassium thiocyanate was again started with the same dosage as last given. The blood pressure tended to remain lower while a placebo was administered than before treating even after the blood cyanates were reported as only a trace or none at all.

TABLE VII. COMPARATIVE EFFECT OF PLACEBO ON TEN PATIENTS

	Before KCNS	After KCNS	On Placebo	On repeating KCNS
Range in systolic blood pressure	158-230	118-180	148-220	126-184
Range in diastolic blood pressure	88-132	70-100	88-112	78-102
Average systolic blood pressure	208	152	190	156
Average diastolic blood pressure	108	88	98	92

Case Reports

Case 1.—A. S., a sixty-two-year-old white man, was first seen October 10, 1941, with a history of hypertension of eight years' duration. B.U.N., P.S.P., urine concentration and dilution, electrocardiograms and blood cell counts were within normal limits. The only symptom of hypertension was a severe headache. Blood pressure ranged from 170 to 200 systolic and 96 to 110 diastolic with an average of 180 systolic and 102 diastolic. Thiocyanate, begun on December 30, 1941, controlled the headache and a dose of six grains maintained a lowered blood pressure averaging 131.2 systolic and 85.8 diastolic on a dosage of six grains of potassium thiocyanate and a blood cyanate level averaging 3.4 mg. per cent.

Case 2.—D. C., a fifty-three-year-old woman, was first seen May 20, 1942, with a history of hypertension of two years' known duration and no hypertensive symptoms. Laboratory routine tests were within normal limits. Blood pressure before treatment ranged from 210 to 232 systolic and 108 to 120 diastolic with an average of 224 systolic and 112 diastolic. Potassium thiocyanate was started July 2, 1942. On a dose of six grains, the blood pressure dropped to an average of 168 systolic and 91 diastolic on an average dose of six grains and blood cyanate level averaging 9.8 mg. per 100 c.c. of blood.

On January 21, 1943, a placebo was given. On February 16 the systolic blood pressure rose from 172 to 220 and the diastolic from 98 to 110 while the blood cyanates were 1.1 mg. per cent. On March 9, 1943, the systolic blood pressure was 216 and the diastolic was 108 and blood cyanates a trace. On this date potassium thiocyanate was again started with six grains and on March 23, 1943, the systolic blood pressure was 174, the diastolic blood pressure was 94 and the blood cyanates 5.5 mg. per cent.

Comment

Assuming that it is desirable to reduce the blood pressure in hypertensive patients in order to lessen the dangers of cardiac failure, cerebral hemorrhage, and uremia, it is reasonable to believe that any drug that will do so even if only moderately or for only limited periods, will tend to prolong life. Whether potassium thiocyanate will prolong life in hypertensive people is, of course, the factor that needs more prolonged intensive study. We believe that in potassium thiocyanate, we have a valuable drug in attempting to obtain this end. It is toxic and should only be given under strict supervision and careful laboratory check. Under these circumstances,

it is safe but it should only be given to coöperative patients. As in all chronic diseases where medication is used over prolonged periods, it is very difficult to keep patients on treatment especially if they have no symptoms, are feeling better, and at the same time must report at relatively frequent intervals to get blood tests. It is possible, though admittedly difficult, to do this by impressing the patient with the importance of trying to reduce the pressure to avoid the usual hypertensive risks.

Summary

1. Vitamin A had no effect in twenty cases of hypertension.

2. Potassium thiocyanate in seventy cases resulted in 15 per cent reduction in blood pressure in thirty-two cases and 10 per cent in fifteen cases.

3. Potassium thiocyanate gave symptomatic relief in forty-three of fifty-eight patients with hypertension symptoms.

4. Potassium thiocyanate should be used only under strict laboratory supervision and only in coöperative patients.

5. The blood cyanate level should not exceed 12 mg. per cent.

6. The question of the ability of this drug to prolong life in hypertension patients needs more intensive study and control groups over a long period of time.

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DIVERTICULITIS

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A DIVERTICULUM may occur as an outpouching from any hollow viscus or duct. Its more frequent occurrence in the urinary bladder, urethra, gall bladder, common duct, and the entire gastro-intestinal tract is better known. It has been stated that 5 per cent of post-mortem examinations will show diverticula; and clinically, it is held that the percentage is even higher.

According to Dixon, Deuterman, and Weber, the site of diverticula of the intestines is as follows:

Site	*Per Cent*
Duodenum	18
Jejunum	6
Ileum	1.5
Cecum and Ascending Colon	4.5
Sigmoid	59.5
Rectum	3

The percentages of its occurrence for the pharynx and esophagus are quite small. Lackhard Mummery stated that the number and size of diverticula are increased as the opportunity is afforded for observation over a period of years. They occur usually in individuals over forty years of age, but have been reported at all ages. Staut reports an incidence of diverticulosis in 1.89 per cent of the appendices removed at the Presbyterian Hospital in New York in one year. These diverticula occur between layers of the meso-appendix projecting like buds and are often multiple.

Rankin's classification provides an excellent division in terms of pathology, clinical manifestations and indications for treatment.

1. Diverticulosis. These are cases where, as a result of history and examination, x-ray, or autopsy, the diverticula were found to have no relation to the patient's complaints.

2. Diverticulitis. This term indicates acute or chronic infection, complicated with the formation of abscesses and fistulas, external and internal (vesicocolic-enterocolic), and cases associated with malignancy.

There is no unanimity of opinion regarding the cause of diverticulosis. Usually the acquired type is seen near middle age and some hold the opinion that the fundamental cause is the inherent weakness of the intestinal musculature, with increased intraluminal pressure. The locations are at the entry of blood vessels and also at the sites of the appendices epiploicae.

As a diverticulum has only two layers, the mucosa and peritoneum, forming the wall of the diverticulum, it has no power to expell any contents it may acquire. One can readily understand that if the neck of the sac is narrower, there is a constant potential danger of obstruction, distention and inflammation. A diverticulitis then results.

That diverticula of the colon can be visualized by roentgen ray in the abscence of symptoms is of no great significance, and is not an uncommon finding in about 5 per cent of individuals. However, when symptoms point to the region where diverticula were seen, it is reasonable to assume that a diverticulitis involving one or more sacculations is present. Secondary infection from retained fecal material is usually an important factor.

In the chronic recurring type, we have a low-grade inflammatory process limited to one or a few of the sacculations. The symptoms are not of a severe nature, but the patient complains of lower left abdominal pain and soreness aggravated by exercise, pressure of clothing, and constipation. The severity of the symptoms vary from very mild to those of a more subacute nature, and even the formation of a mass in the left groin does not prevent these patients from being up and around and are seen at times in the office. The condition usually involves many diverticula and with the inflammatory process of each spreading and coalescing can involve a considerable segment of the sigmoid producing a rigid pipe-like portion, which may persist over a long period of time (even years) before it gradually subsides. Some patients will carry this indurated area indefinitely and with the occasional exacerbations of symptoms the individual may be incapacitated for a varying length of time. Spasm of the adjacent segments of the intestine tends to aggravate the condition, causing the patient to exaggerate his complaints.

The diagnosis of the chronic form offers little trouble as a rule, as the history, physical find-

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ings, and the roentgen ray show sufficient evidence. At times, mistakes have been made when a mass has been found low in the cul-de-sac and, without x-ray corroboration, it has been mistaken for an ovarian tumor or endometriosis. Again, the interpretation of the x-ray film may offer difficulty, and some of these cases have been considered malignant. It is well to remember that in diverticulitis, the filling defect as seen with the fluoroscope or film is much longer as contrasted to malignancy which involves as a rule a smaller segment. Those offering this difficulty in diagnosis usually do not show any individual diverticula at or near the malignant lesion in question. Furthermore, there is no evidence to support the belief that carcinoma results from diverticulitis, although in a small percentage the two may coexist. Errors occur most frequently in women, where there may be vague, indefinite symptoms of lower abdominal and pelvic distress and a mass may be felt on bimanual examination, its exact nature at times being difficult to determine.

The use of the proctoscope and sigmoidoscope will at times help in identifying the presence of these diverticula in the upper rectum or lower sigmoid. The signs of decreased mobility, angulation or narrowing of the bowel, and the presence of one or more openings or dimpling would be of great assistance in diagnosis.

Graham summarizes the symptom complex of diverticulitis as follows:

> "The patient is over forty years of age, and has suffered vague, recurring abdominal distress, mostly in the lower abdomen, often radiating into the rectum and relieved by the passage of flatus and stool. Constipation, with rare bleeding and occasional diarrhea is present in a fair proportion of cases. Almost all patients will give a past history of attacks of acute abdominal pain associated with fever."

In the acute form, it resembles very much the symptoms of an acute appendix and has been called left-sided appendicitis. While the inflammatory process may be similar to appendicitis the treatment of diverticulitis is different. The process is acute at its onset, involving one or more diverticula and is characterized by pain, temperature, nausea, and vomiting, leukocytosis and localized tenderness with rigidity and constipation. The disease may subside and the bowel will apparently return to nearly normal, but recurrence may take place at intervals of weeks or months. Perforation of one of these diverticula may occur with ensuing general peritonitis, or, as more frequently occurs, protecting adhesions form with the omentum, neighboring loops of bowel, the bladder, or the abdominal wall, thus localizing the abscess. The inflammatory mass may subside or perforation and fistula formation into one of the above-mentioned structures can occur. One of the less common sites of this complication is the urinary bladder and the vesicocolic fistula results. The advent of this serious complication, which is more often seen in males, is characterized by cystitis and passage of gas and fecal matter per urethram which manifestations are easily diagnostic of the condition. Low diverticula in the upper rectum have been the cause of ischiorectal abscess and fistula, and vesicovaginal fistulæ have often been encountered.

I have had one case where a perforation posterior in the region of the sacrum resulted in a fistula which burrowed around the retroperitoneal area of the left ileum, and into the sacro-iliac joint. On another occasion, a patient with acute severe lower left abdominal pain and constipation took an enema and the pressure of the water caused a perforation of the weakened inflammatory wall at the junction of the bowel and diverticulum. A hurried laparotomy revealed the free fluid in the abdominal cavity, and a colostomy was done in the descending colon above the large, indurated, pipelike, inflammatory sigmoid. The patient recovered, and up to this date, several years after the operation, has refused to have the colostomy closed.

My attention was recently called to a case which came to post-mortem. A ruptured diverticulum was followed by a pelvic abscess, this in turn being followed by a subdiaphragmatic abscess which was undiagnosed and ruptured into the pleural cavity causing empyema and in time death from toxemia.

Treatment

The treatment of diverticulosis is of little consequence. The condition is diagnosed usually when a barium enema is given. However, when diverticulosis is recognized, the patient should be warned that constipation might be a factor in producing diverticulitis and that proper steps should be taken as regards diet and elimination. One should remember that complications can develop during the time that they are under medical treatment.

However, should an inflammatory process start in these small out-pouchings, continued regulation of the bowels, the application of heat—especially diathermy, and rectal irrigations should be instituted and anti-spasmodics should be given. While the latter have no effect on the thickened and inflamed bowel, they do on adjacent loops. The giving of the various sulfa drugs may greatly modify the course, and perhaps abort a sudden, acute flare-up from the chronic state. Sulfasuxidine, acting more directly on the intestinal flora, tends to reduce the gas formation, and thereby relieves the intralumen pressure, lessening some of the symptoms. This combination of treatment will usually take care of the majority of cases in a comparatively short time, but, if the condition is more acute it is absolutely necessary that the patient be put to bed and watched very carefully.

There have been two schools of thought regarding the procedures to be taken at this stage: one is the concentration on watchful waiting and symptomatic treatment; the other is early operation. Erdman especially is outspoken in his advice: "The acute condition presents but one solution in the absence of contra-indications, and that is, early operation!" This is quite contrary to the stand taken by the majority of surgeons who feel that operation should be reserved for the complications such as perforation and obstruction. It should be realized that there is an 18 per cent operative mortality, and furthermore, there is also the economic factor to be considered, as some individuals are under care for a long time as a result of complications following operation on the acute suppurating mass. Extensive pylephlebitis may be present around the mass and extend into the large mesenteric veins.

Again the sulfa compounds are of definite value, and when impossible to use by mouth, sulfanilamide, in 0.9 per cent solution, can be given under the skin, or 5 gm. of sulfathiazole in 75 c.c. of water may be given intravenously. Both of these have been valuable adjuncts in handling these very acutely sick patients.

Perforation in the majority of cases is of the protective type where adhesions have had time to form and, as a result, the general peritoneum is usually walled off and all that is necessary at this time is to drain the abscess. The obstructive types should be handled by procedures indicated for conditions present at the time.

Obstruction in the terminal colon is not of such a serious nature as that in the small intestine, and temporizing with the condition may be allowed for a time. The use of nasal suction may often be of benefit if the iliocecal valve is not too efficient in keeping the gas trapped in the colon. Hot packs or diathermy to the abdomen and repeated warm rectal irrigation may tide the patient over the obstructive crisis and obviate operation. One can well afford to wait and try these methods for a number of days before advising more radical interference. The general condition must be carefully watched and supportive measures with plenty of intravenous fluids and transfusions can be utilized as required.

Colostomy above the infected area carries very little risk. However, it is necessary to continue the side-tracking of the intestinal contents for some time (many months) to permit all the inflammatory reaction to subside. If a more direct attack on the mass itself is advisable, the Mikulicz type of resection in the presence of a distended thickened bowel is the safest. It may require more hospital days for the patient, but a resection and direct anastomosis is more hazardous. However, in doing any type of resection it is even safer on account of the inflammatory thickening, perforation or possible abscess formation and the difficulty in handling the mass to do a preliminary temporary colostomy. The internal fistulous openings with the bladder or intestines, or to the exterior can usually be dealt with much more easily and safely after a previous colostomy, and a sufficient length of time should elapse afterwards to permit a subsidence of the inflammatory process before radical procedures are undertaken. This may take many months before complete disappearance of the mass occurs, but one should be willing to wait, and may at times be surprised to find that nothing further will be required in the way of a direct attack on the lesion itself, and only closure of the colostomy is necessary.

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INTRAPLEURAL PNEUMONOLYSIS

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DURING the last ten years intrapleural pneumonolysis, the procedure of cutting intrapleural adhesions, has assumed a very important place in the therapy of pulmonary tuberculosis.

For many years artificial pneumothorax had been employed by physicians to collapse the diseased lung in order to induce more rapid and complete healing of the tuberculous process. In those cases where an adequate collapse was obtained the results were usually very satisfactory. However, in many cases where pneumothorax is induced, an adequate collapse is not obtained due to the presence of sheet, band, or cord adhesions between the visceral and the parietal pleurae. These adhesions are caused by an inflammatory process or pleuritis occurring in the areas adjacent to the tuberculous process in the lung parenchyma. For this reason they often prevent an adequate collapse of that part of the lung where it is most necessary if the disease process present is to be controlled. It is in these cases that intrapleural pneumonolysis plays such a vital role. By severing these adhesions, a good collapse results and control of the tuberculous process can be obtained.

It is not the purpose of this paper to discuss in detail, all the aspects of intrapleural pneumonolysis. But we do wish to call to your attention the fundamentals of this procedure, and its place in the modern treatment of pulmonary tuberculosis.

The operative procedure of intrapleural pneumonolysis is briefly this. Two cannulae are inserted through the intercostal spaces into the pleural cavity at points selected after location of the adhesions by means of fluoroscopic and x-ray studies. A thoracoscope is inserted into one cannula and an electrocautery is inserted through the other. Thus the adhesions may be cut under complete visual control. The operation is performed under local infiltration anesthesia, using 0.5 to 1 per cent novocaine. Extreme care and judgment must be used in deciding which adhesions are safe to cut and which ones must be left alone. As the skill and confidence of the surgeon increases he finds that he can cut many of the more difficult adhesions with reasonable safety. The surgeon must evaluate the risk involved in cutting the various types of adhesions encountered and balance this against the risk of leaving the underlying disease process uncontrolled.

One cannot always tell by examining the chest plate whether or not the adhesions are cuttable. However, if the pleural space is sufficiently large to permit manipulation of the thoracoscope, it does no harm to examine the adhesions under direct vision, and determine if they can be safely cut.

As a result of our experience with this procedure we have come to believe that intrapleural pneumonolysis should be considered in every case of pneumothorax where the collapse of the lung is inadequate because of adhesions. In other words, if there is enough diseased lung present to warrant collapse by pneumothorax in the first place why not use any reasonably safe procedure to make the collapse as effective as possible?

The optimum time interval between induction of pneumothorax and the attempted pneumonolysis may vary from two to six weeks. We have done most of ours within three or four weeks after starting the pneumothorax. In some cases it has been found advantageous to sever the adhesions in more than one stage. The time interval between stages will depend upon the type of adhesions present and the underlying parenchymal lesions. We believe that in most cases the interval should be not less than two and not more than six weeks.

The complications resulting from intrapleural pneumonolysis are neither serious or numerous in the great majority of cases. Transient pleural effusion of small degree occurs rather frequently. In some cases there is persistent effusion requiring aspiration. The most dreaded complication is empyema. However, statistics of surgeons experienced in this procedure show that empyema occurs in but 1 to 4 per cent of cases. The benefits from an adequate collapse greatly offset the risk taken in this respect.

Read at the annual meeting of the Southern Minnesota Medical Association, Austin, Minnesota, August 23, 1943.

Serious hemorrhage in capable hands occurs so seldom as to be disregarded as a serious risk. Surgical shock occurs but rarely.

Emphysema of the chest wall in moderate amounts may occur rather frequently but disappears usually within a week or ten days. This occurs when air in the intrapleural space is forced out through the cannular incisions into the chest wall, due to coughing or vomiting.

Our series of cases at Mineral Springs Sanatorium is relatively small and dates from October 1, 1940 to June 1, 1943. It represents sixty-four operations performed on forty-six patients. Twenty-nine patients had a one-stage pneumonolysis, sixteen patients had a two-stage, and one patient had a three-stage. Two patients had bilateral operations.

Dr. T. J. Kinsella of Minneapolis performed three of the operations and Dr. G. A. Hedberg of Nopeming Sanatorium performed three of them. The remainder were performed by the author.

Of the forty-six patients, nineteen were diagnosed as far advanced on admission to the Sanatorium; twenty-five were moderately advanced and two were minimal.

Thirty-seven patients had positive sputum before operation. Thirty-five patients had definite or suspicious cavitation in the lung on the operated side. An apparently successful collapse of the operated side was obtained in thirty-six cases (78 per cent). By apparently successful collapse of a lung we mean cavity closure and arrest of the disease process as shown by radiograph. In four cases, we were unable to safely cut enough adhesions to effect an adequate collapse with cavity closure on the operated side.

Of the seven patients who still have positive sputum, three have cavities in the opposite lung.

Twenty-nine of the forty-six patients are now considered as arrested or apparently arrested cases. Eight more are greatly improved and progressing satisfactorily at the present time.

Four of the forty-six patients are now dead. Two of these died within sixty days after operation. One of these two developed a fresh spread on the opposite side and the other was complicated by empyema and a severe diabetes mellitus.

Of the other two deaths, one developed a broncho-pleural fistula on the operated side with resulting empyema three months after operation, and one died fifteen months after operation due to a spread in the opposite lung. The four patients who died had far advanced tuberculosis on admission to the sanatorium.

Summary

Of forty-six patients in this series 29 are now arrested or apparently arrested; eight are greatly improved and making satisfactory progress; five still have activity not yet under control; and four are dead.

Conclusions

Intrapleural pneumonolysis is a very satisfactory method of converting an inadequate pneumothorax into a successful one. In capable hands it is reasonably safe and there are very few serious complications. We feel that all cases of unsuccessful pneumothoraces should be considered for this procedure in order to obtain the best results.

BREAD-MOLD PREVENTIVE CURES ATHLETE'S FOOT

Sodium propionate, a chemical now being used by many large baking companies to check the growth of mold in bread and cake, is an effective remedy for athlete's foot, ringworm and many other fungous infections, Dr. Edmund L. Keeney, of Baltimore, and Comdr. Edwin N. Broyles, of the Johns Hopkins Medical School now serving in the Navy, report. (*Bulletin of the Johns Hopkins Hospital.*)

The chemical is used in an ointment, as a powder and in a solution.

Some of the fifty-five midshipmen at the U. S. Naval Academy who used the chemical for athlete's foot were cured in four weeks. After twenty weeks of treatment, fungous material was found in scrapings from the feet of only three of the men.

The remedy was equally effective in patients with ringworm of the scalp and of the skin, fungous infections of the ear, thrush and blacktongue due to a fungus.

Besides the ninety patients reported on, an additional 376 have been treated with sodium propionate in ointment, powder or solution, without any sign of irritation from its constant use. A contact dermatitis developed in one patient after four days of treatment.—*Science News Letter,* February 12, 1944.

HUMAN SERUM AND PLASMA IN PEDIATRIC PRACTICE

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HUMAN serum and plasma have found an especially secure place as therapeutic agents in diseases of children. The relative lability of the infant's fluid matrix, his lack of immune response to many infections, and the nature of disturbances peculiar to his age, combine to pose a threat which can often be countered most effectively by physiologic constituents of blood.

Transfusions of citrated fresh whole blood were formerly employed for all these conditions, and, of course, they are still used effectively in instances where oxygen-carrying capacity of red blood cells is needed. While stored blood has been tried as a substitute for fresh blood, it has been shown to be relatively unstable. There is a gradual drop in erythrocytes, leukocytes, prothrombin, complement, and in antibacterial properties.[5,15,22,23,24] Diffusion of potassium from the red cells makes its use especially undesirable if renal or hepatic insufficiency is present.[8]

Serum and plasma are indicated and superior to blood in acute and chronic infections, in states of hypoproteinemia, in severe disturbances of fluid equilibrium, and in conditions due to inincreased capillary permeability caused by burns trauma, and hemorrhage.[19]

Interest in physiologic protein substitutes has been especially stimulated by the more recent investigations on the physiology of fluid equilibrium and shock.[2,6,9,11,16,19,26]

Plasma, the fluid portion of non-coagulated blood after removal of blood cells, is made up of albumin, globulin, fibrinogen, water, electrolytes, antibodies, and other organic constituents of blood. Although plasma is more popular as a blood substitute in this country, serum, which is almost identical, save for the removal of fibrinogen by clotting, is easier to prepare and has been the agent of choice for convalescent antibody transfer in children. Convalescent serum or a hyperimmune modification of this has been employed in many acute infections but it has been found especially effective in the prophylaxis and treatment of scarlet fever, measles, pertussis, and epidemic parotitis.

It is probable that a pool made up of specific sera collected from scarlet fever patients in a given epidemic will contain many specific antibodies against the type of hemolytic streptococci most commonly encountered in that epidemic. For this reason it is important that convalescent sera be collected early in an epidemic, pooled, and used for therapeutic purposes while the organisms against which the antibodies have been elaborated are still predominant. Type-specific antibody, whether produced by, or transmitted to, a patient, is an important part of the recovery mechanism from streptococcal disease. When conferred intravenously to the sick child, who may be incapable of efficient antibody production himself, it quickly combats toxemia and inhibits bacterial invasion.[21]

Reports on the use of convalescent measles serum have contributed to a vast medical literature. However, it was not until effort was made to collect, pool, and preserve a large supply of serum that reports of controlled experiments began to appear, and its value became generally acknowledged. It is now recognized as the most effective agent available against a disease which has appeared as a real menace during time of war.

Success with convalescent serum in measles led to attempts toward modification of whooping cough. Bradford[3] contributed much fundamental research to this problem. He showed that intratracheal inoculation of H. pertussis into a mouse would produce consistently uniform findings in the lungs. He made use of investigations of humoral immunity in pertussis chiefly directed toward studies relating to specific agglutinins and complement-fixing antibodies.

Because of the increase in the opsonocytophagic reaction in the blood of individuals who have a history of pertussis and were subsequently hyperimmunized, this procedure has been recommended to make available a group of donors for hyperimmune convalescent serum. This hyperimmune

From the Department of Pediatrics and Human Serum Laboratory, University of Minnesota.

serum protected young mice against death from experimentally induced infection with H. pertussis when the serum was injected at the same time that the organisms were administered.[4] Thirty-two from a group of forty treated mice survived, while only four survived from a group of forty controls. The degree of lung involvement in the treated group was definitely less than in the controls. The difference between the groups in the number of mice showing negative lung cultures at autopsy was also statistically significant.

Bradford tested the effect of hyperimmune human serum upon the humoral antibody titre in human pertussis. A group of nineteen infants and three children in the early stage of pertussis were treated by the intramuscular injection of from 10 to 40 c.c. of hyperimmune human serum. In nineteen of the group the opsonocytophagic reaction and agglutinin titres of the blood were determined immediately before and after serum injections.[14] The humoral antibodies as measured by these methods were increased to levels comparable to those characteristic of convalescence. A definite decrease in the absolute number of lymphocytes of the blood was noted in fifteen of the twenty-two cases, and there was marked improvement in the clinical course of the disease in eighteen of the twenty-two cases treated with the serum. Although evaluation of serum in whooping cough is most difficult from a statistical standpoint, results with the use of hyperimmune serum among exposed or afflicted infants have been dramatic in our experience. It is prepared in our laboratory from the blood of medical students who give a history of pertussis and who have been inoculated at frequent intervals with Sauer's vaccine during a period of one year.

Mumps convalescent and pooled normal adult serum have been used by McGuiness, Stokes, and Mudd.[17] Results in comparative studies with controls strongly suggest that it has prophylactic merit when used promptly after exposure.

A favorite form of treatment used by many physicians in cases of bacteremia is the administration of transfused blood. The transfusion is generally given not because the patient needs blood cells but because he needs the immune substances contained in the transfused blood. It has been observed many times that patients with bacteremia show a slight increase in the complement titre of their blood at the onset of the illness. The amount of complement decreases as the infection progresses and with recovery gradually returns to normal. In severe cases, the complement continues to decrease, and many severely ill patients show a complete absence of complement. Most of the patients dying of bacteremia show a great decrease or a total absence of complement in their blood. It would therefore seem that complement constitutes a very important immunological factor in combating infection.

It has been shown by Cadham[7] and others that patients transfused with large or moderate amounts of whole blood suffer a loss of complement. When serum alone is administered, on the other hand, complement actually increases. From this it may be assumed that decrease in complement following whole blood transfusion is due in some way to the cellular portion of the blood. Moreover, it seems that transfused serum actually stimulates the production of the recipient's complement. Complement titres taken following transfusions with serum become higher than could be accounted for by the complement contained in the transfused serum alone. It is suggested, therefore, that additional complement is produced by the patient himself, due to the stimulating action of the transfused serum.

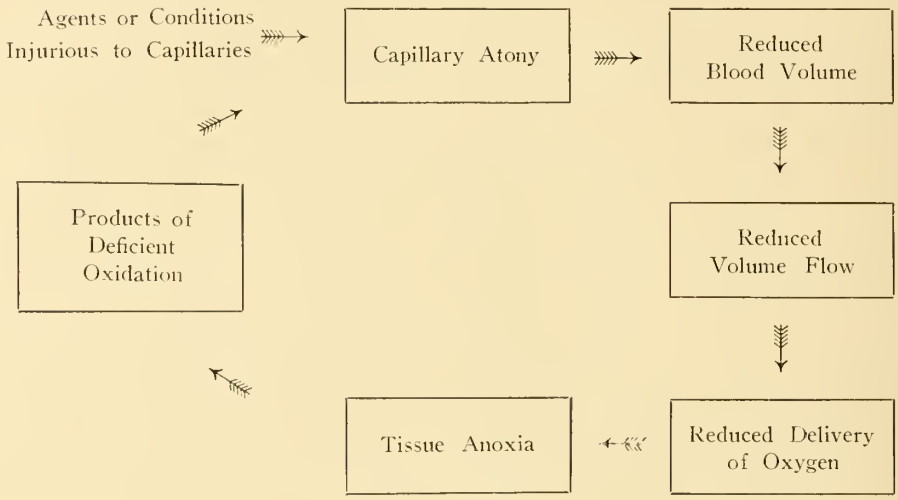
It is well known that chronic infections often cause a depletion of protein in the body. As in acute infections, where protein levels may have a bearing on survival,[25] the influence of chronic infection is similar even though the results are less dramatic. Moreover, a cycle is often initiated during chronic infections in which diminished protein intake, excessive loss of protein, hypoaminoacidemia, and negative nitrogen balance may result. Plasma or serum can materially help to combat chronic infection in children in two ways: (1) by its non-specific effects on metabolism and (2) by conferring antibodies contained in adult plasma pools. Infections in the very young are often accompanied or overshadowed by the effects of hypoproteinemic states.

Disturbances of fluid equilibrium, especially dehydration, in the sick child are frequently of greater importance than the underlying disease itself. This is true because of the relatively greater susceptibility of children to the effects of changes in volume and character of body water.

The small child has a greater percentage of water in his body than the adult and a greater partition of this is extra-cellular where it serves to maintain plasma volume. He may, therefore,

lose a proportionately greater amount of fluid during dehydration. If, following vomiting, diarrhea, or the pronounced febrile response so common to the child, he loses water and salt to the point where replacement of these does not bring tained trend toward proper water and electrolyte balance can be achieved.

Nutritional deficiencies are intimately concerned with a lack of protein. Studies reveal clearly that reduced plasma protein is directly



about maintenance of his fluid stability, it is because adequate quantities of these are not retained in the blood stream. There then begins a cycle of diminished blood volume, hemoconcentration, impaired renal function, and loss of electrolyte balance. If protracted vomiting has been the prominent symptom and alkalosis is indicated by the occurrence of shallow respiration, hypertonicity, and lack of chloride excretion, the therapeutic need is saline solution, calcium gluconate or chloride, and plasma intravenously. If, on the other hand, diarrhea, with loss of basic intestinal secretions has occurred, reduction in plasma bicarbonate may have reached an extreme. Hemoconcentration and stagnation then cause impaired renal function. Exhaustion of carbohydrate reserve and anoxemia permit intermediate products of fat metabolism and acids to accumulate in the blood. The resulting acidosis may then be attended by an increase in capillary permeability and manifested by stupor, hyperpnea and symptoms of shock. Such a seriously altered physiologic state can best be corrected by the intravenous administration of glucose and buffered sodium lactate or bicarbonate, followed by a protein colloid such as plasma. Restitution of plasma volume will tend to increase renal function. Fluids containing buffer substances may then be held in the blood stream so that a sus-

responsible for nutritional edema in children whether the primary cause of the hypoproteinemia is prematurity, inadequate feeding, coeliac disease, or any process which interferes with normal fabrication of protein.[18] When plasma protein and volume are restored, edema promptly disappears. The relative frequency of this condition and its association with malnutrition has been especially emphasized by K. Dodd.[10] There is no doubt that nutritional hypoproteinemia at or slightly above the "edema level" is very common in delicate babies and children with deficiency diseases, and that a prompt restoration of normal levels may alter an apparently refractory clinical course.

From a relatively simple beginning these altered physiologic conditions, accelerated by infection or other factors, often rapidly approach a critical state. Much of the mechanism of secondary shock then develops.

More dramatic and urgent than secondary or medical shock is the rapidly progressive primary shock precipitated especially by trauma, hemorrhage, and burns. Moon[19] and others have shown that plasma escapes through the capillary walls into the tissues in all types of shock and that diminution of blood volume results. While the intimate nature of shock is not yet entirely clear, and some disagreement still prevails concern-

ing the neurogenic, vasogenic, and hematogenic roles involved, the accompanying schematic presentation by Moon serves to present many of the stages in its pathogenesis. (See page 192.)

Increased permeability of the capillaries and plasma loss are attended by reduced blood volume, capillary dilatation, hemocytoconcentration, lowered venous pressure, reduced cardiac output and volume flow, anoxemia, and tissue anoxia. If these changes continue and are not recognized by the finding of a high hemoglobin, red blood cell count, hematocrit, and specific gravity of the blood, a resulting fall of arterial pressure and an irreversible state develop rapidly. Plasma can interrupt this process by increasing the circulating blood volume and improving vascular tone.[12] Fluid is thus drawn back from the tissues due to increased osmotic pressure, and the improved blood volume helps to reverse the cycle. Some observers prefer concentrated plasma for this purpose.[20]

Restoration of serum protein values for elevation of osmotic pressure of blood to reduce localized or generalized collections of intracellular fluid has been attempted in nephrosis.[1] Patients with a favorable response lose weight in a manner similar to that in which weight is lost in spontaneous renal crisis, which may mean that a similar process is initiated by this type of treatment. Cases with a nephritic component do not show such a response.

Hughes, Mudd, and Strecher[13] have reported a series of cases in which concentrated serum was used for the reduction of increased intracranial pressure. They point out that concentrated blood serum approximates the theoretically ideal hypertonic solution for reducing intracranial pressure. It is essentially a solution which has a high osmotic pressure and contains solutes which will remain in the blood vessels to exert a continued osmotic effect.

Experiments on dogs were conducted by Wright and Bond[30] in which cisternal puncture was done to obtain continuous readings of intracranial pressure. Their results indicate that a single administration of concentrated serum may produce lowering of increased intracranial pressure for as long as twenty hours.

Investigators[29] of the causes of disruption of abdominal wounds have pointed out that experimentally and clinically a state of hypoproteinemia may be one of the factors which retards normal healing. Dogs in whom a state of protein deficiency was induced were subjected to abdominal laparotomy. In most of these, disruptions of the wound or failure of the incision to heal was observed. Subsequent experiments demonstrated that normal healing of the wound occurred when the hypoproteinemia was controlled by intravenous infusion of plasma. Concentrated plasma is thought to have two advantages; it rapidly corrects the deficiency of blood proteins, and, being a hypertonic solution, increases the osmotic pressure of the blood and tends to overcome any tissue edema which may be present.

Rapid extensive hemorrhage causes dilution of blood, loss of extra-vascular fluid, dehydration, and distorted fluid equilibrium. Since immediate need in severe hemorrhage is restoration of blood volume and pressure and because typing and cross-matching are unnecessary[27] when pooled plasma is employed, it would seem more expedient and safer to use plasma for the hemorrhagic emergency and replace blood cells by transfusion subsequently, if the hemoglobin level is appreciably reduced.

Obviously, no comprehensive formulæ can be evolved to determine the requirement of all factors in a mechanism so complex and precipitated by so many causes as the failing circulation of the sick child. Clinical judgment to determine the need for specific and group antibodies, for fluids, for electrolytes, and for protein sufficient to maintain an adequate circulating blood volume are all important. Determination of plasma protein, the number of red blood cells, the hemoglobin, hematocrit, and specific gravity of the blood are invaluable adjuncts. Katherine Dodd has stated the principle exceedingly well: "In a child taking inadequate food and not receiving transfusions, a gain in weight, accompanied by an increase in hemoglobin and a decrease in plasma protein, means that plasma fluid and protein are being lost from the blood stream."

The dosage of human plasma and serum must depend on the weight of the child and the seriousness of the condition for which it is to be employed. For the transfer of specific antibodies in prophylaxis and treatment of disease, doses of 10 c.c. to 100 c.c. are usually given. In chronic infections and hypoproteinemic states, doses should be gauged to accomplish physiologic levels of plasma proteins. For the sake of illustration, a computation of approximate protein need in a

10 kilogram baby whose plasma protein level is 5.3 grams per 100 c.c. of blood is appended.

Plasma Protein (Patient) = 5.3 gm./100 c.c. Blood
Plasma Protein (Normal) = 6.7 gm./100 c.c. Blood
Deficit = 1.5 gm./100 c.c. Blood

Weight of Patient = 10 K
Blood Volume (8%) = 800 c.c.
Deficit 8 x 1.5 = 12.0 gm.
12.0 gm. = 175 to 200 c.c. Plasma (Approx.)
Additional { x Factor = Depleted Reserve
{ x Factor = Maintenance

Plasma and serum are usually stored in the refrigerated, the frozen, and the desiccated states. Strumia and McGraw[28] who have studied the advantages and disadvantages of each method of preservation have summarized these as follows:

"1. Regardless of the means of preservation employed, plasma must be safe from the standpoint of (a) bacterial contamination, (b) presence of flocculent protein precipitates, and (c) unusually high isoagglutinin titre.

"2. The manner of preservation greatly influences the survival of various specific elements of plasma. To summarize: (a) Preservation of plasma in the liquid state at room temperature (approximately 25 C.) causes very little flocculation but rapid loss of prothrombin and complement. It should be filtered before use, and the danger of rapid growth of a chance contamination must also be kept in mind. The value of such material is limited almost entirely to the total protein content. (b) Preservation of plasma in the liquid form at 4 C. maintains a fair quantity of prothrombin and complement for a period of approximately fifty days, but causes maximal flocculation within a few hours. Filtration is essential and the danger of bacterial growth from a chance contamination is not eliminated. (c) Preservation of plasma in the dried state effectively prevents bacterial growth and flocculation, but the regenerated material has lost almost all the prothrombin and a portion of the complement when drying involves quantities of 250 and 300 c.c. It need not be filtered and permits concentration if desired, but it is of little value for hypoprothrombinemia. (d) Preservation in the frozen state prevents bacterial growth and flocculation and at the same time insures almost complete preservation of all specific elements, including prothrombin and complement. After proper thawing it need not be filtered, and the therapeutic value is practically equal to that of freshly prepared plasma. Thawing must be rapid in the water bath at 37 C. and thereafter, until administered, the liquid plasma must be kept at room temperature.

"3. The loss of essential elements occurring with preservation of plasma in the liquid state or in the dried form obviously limits the therapeutic application of plasma thus preserved. Plasma maintained in the frozen state and properly thawed is almost identical to the original material."

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REPORT ON BIOLOGICS AND LABORATORY DIAGNOSIS OF INFECTIOUS DISEASES BY THE BIOLOGICS COMMITTEE* OF THE STATE BOARD OF HEALTH

In May, 1943, the State Board of Health appointed a committee on biologics. It seems especially important at this time with an increasing shortage of physicians throughout the state to do everything possible to forward immunization and to furnish more types of immunizing agents. Because of these considerations, the number of immunizing agents offered by the state were increased July 1, 1943, and the purchase and distribution of all biologics were placed under the Division of Preventable Diseases, University Campus, Minneapolis. This last was done as it is quite apparent that the handling of biologics logically falls under the latter division as it relates to the prevention and control of communicable disease.

Our report is purposely made in outline form hoping that this type of information will prove to be worthwhile to the busy practitioner. Diseases are covered from the standpoint of incidence, laboratory tests, immunization, prevention, and therapeutic biologics. However, not all biologics are distributed by the State Department of Health, and information is given on others as it may be of use to the practitioner. Not all infectious diseases are covered, but the ones that are important in this state at the present time or may be in the near future are included.

The present report summarizes the opinion of the committee at the present time, and the information will be brought up to date from time to time.

Please return requested receipts for biologics and histories to the Division of Preventable Diseases.

NOTE: All biologics must be kept under refrigeration. Before opening any package containing biologics, note expiration and record; if outdated, do not use.

Diphtheria

Incidence in Minnesota: 1943, 377 cases, 21 deaths. 1942, 139 cases, 12 deaths (increasing).

Diagnostic Tests: Cultures on Kleb's Loeffler Media sent to State Laboratories. *Note:* Do not delay use of antitoxin until results of cultures are received.

Active Immunization: Diphtheria tetanus toxoid recommended by this Committee as it also immunizes for tetanus. While the death rate is not high in this state from tetanus, it is as high as from diphtheria. The great advantage in active immunization to tetanus is that otherwise a large number of persons, on sustaining any type of small injury, may be subjected to prophylactic doses of tetanus antitoxin. This may lead to a sensitization to horse serum. Secondly, judging from information available from the American and British armies in the present world war, it would appear that active immunization is an efficient agent in preventing tetanus if a step-up dose is given when injury occurs. (It is the Army practice to give step-up doses yearly after immunization regardless of injury.) A number of published papers on immunization in children have shown that after two or three doses of alum-precipitated tetanus toxoid alone, or combined with diphtheria tetanus toxoid, the tetanus antitoxin level has been at least 0.01 units per cubic centimeter after at least two years. This is considered more than adequate. Sufficient material has not been published to date nor has sufficient time elapsed to give one an adequate idea of how long sufficient immunity may persist so that adequate circulating antitoxin is available after injury in order that a step-up dose of toxoid may be given rather than a prophylactic dose of tetanus antitoxin. Present knowledge does indicate that more circulating antitoxin exists usually two years after adequate immunization with tetanus toxoid than exists temporarily (two or three weeks) after the use of a prophylactic dose of tetanus antitoxin. Tetanus toxoid is an excellent immunizing agent and there is apparently a definite enhancing of immunity when two excellent immunizing agents, i.e., diphtheria and tetanus toxoid are combined. It is recommended that the first immunization be started at 9 months of age and that the diphtheria tetanus alum-precipitated toxoid be given in three doses rather than in two as suggested by the manufacturers. By giving the immunization in three doses, a few slightly unpleasant reactions may be avoided, i.e., local erythema and fever. We should like to point out that not even in allergic children who have been given step-up doses, judging from the publications to date, have real untoward reactions occurred. Older children and adults may have sensitivity to toxoid and these may be tested for sensitivity using 0.1 c.c. intradermally (Maloney test) and proceed as with any other type of injection whether positive or negative. It cannot be over-emphasized that there may be a certain number of adults sensitive to any type of toxoid; for example, formalized or so-called "fluid" toxoid of Ramon. It has been shown in recent years in immunizing large groups of young adults that no difficulty has been encountered with reactions due to alum-precipitated toxoid. It, also, should be strongly urged that caution be used in immunizing older children and adults by using smaller and a larger number of doses of toxoid. This committee wishes to particularly emphasize that a step-up dose of toxoid be given to the child when he is ready to enter school rather than Schick test him to determine presence or absence of immunity. A step-up dose is a far safer measure since then one is more certain of immunity. Although there are a certain number of older adults who are susceptible to diphtheria, we are not advocating general immunization of older adults but rather wish to again impress

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The communicable diseases covered in this issue are those for which biologics are distributed by the State Department of Health through the Division of Preventable Diseases. Information covering the above, as well as the majority of other communicable diseases seen in this state, will be published soon.

the importance of taking nose and throat cultures on all patients seen with sore throats and their contacts, and sending the cultures to the State Laboratories.

To summarize, the committee is recommending primarily for immunization, diphtheria tetanus alum-precipitated toxoid for active immunization. The present policy is to continue to furnish alum-precipitated diphtheria toxoid as long as we have it in stock. It is realized that it may be necessary to continue to furnish a small amount of the latter agent for step-up doses for children who have originally had only diphtheria alum-precipitated toxoid and for whom the community cannot afford the time for a complete diphtheria tetanus immunization. The State Board of Health has discontinued the purchase and distribution of formalized toxoid, not because we do not believe it to be a good immunizing agent but because three doses of this agent are granted to be equal in immunizing value to two doses of alum-precipitated toxoid. If three doses are to be given, the committee is of the opinion that diphtheria tetanus toxoid should be used. The committee is not recommending the pertussis-diphtheria immunizing combination for several reasons:

1. Pertussis immunization should be effected during the first six months of life, as the majority of whooping cough deaths occur in children under one year of age, many in infants under six months. It is hoped that an immunizing agent for pertussis may be developed soon which will be effective at an earlier age.

2. Pertussis immunization when combined with diphtheria has been definitely shown to cause more reactions than when either is given alone.

3. It is safe to delay diphtheria immunization until around nine months and at that time it can be combined with tetanus toxoid and thereby three immunizations are completed.

Schick test material for testing for immunity is furnished by the State Department of Health.

Passive Immunization: Contacts may be given 1,000 units of diphtheria antitoxin but the committee is of the opinion that this should not be done except under exceptional conditions. It is far safer to inspect contacts regularly. A prophylactic dose may give a false sense of security and may not prevent the patient from coming down with the disease.

Treatment: The important thing is to give sufficient antitoxin. This depends on the length and severity of illness. If the disease is mild or moderately severe, 20,000 to 40,000 units of antitoxin should be given intramuscularly. If the patient is seriously ill, from 80,000 to 100,000 and 200,000 units of antitoxin should be given intravenously. There is no harm in large doses of antitoxin and one cannot be certain when one is dealing with a very virulent type of organism which requires large doses of antioxin given early.

Prevention: Immunization diphtheria and tetanus toxoid, Schick test material, and diphtheria antitoxin furnished by the Division of Preventable Diseases.

Measles

Incidence in Minnesota: 11,169 cases in 1943 with 18 deaths. (Doubtless many more cases occurred as disease is not well reported.)

Diagnostic Tests: None.

Active Immunization: Encouraging studies have been made but these are not yet confirmed.

Passive Immunization: Convalescent serum (preferred), immune globulin derived from human placenta and adult immune serum may be effective in the prevention or modification of measles.

When human convalescent serum is given intramuscularly within five days after exposure, in the majority, no disease develops. The passive immunity is of short duration, two to four weeks.

When above serum is given six to seven days after exposure in the majority the disease is limited to a modified form of measles. The following dosage is recommended:

Infants and children under five years—5 c.c.

Children over five years (for every year)—1 c.c.

When serum is given 8 or more days after exposure, there is no assurance of prevention or modification of the disease. The dosage of immune globulin is usually 2 to 4 c.c. Local reactions may follow. If adult serum is used, 15 to 20 c.c. is required, and it is of questionable value.

Treatment: The treatment of measles in the preeruptive stage by convalescent serum in doses of 40 to 50 c.c. by intravenous injection has been advocated. This treatment certainly should be reserved for extremely ill children as convalescent serum is not plentiful. Sulfadrugs are usually effective in complications.

Prevention: The usual health regulations, but it is difficult as the disease is so communicable. Every attempt should be made to protect very young children. *Measles Convalescent Serum* is distributed by the Division of Preventable Diseases for the prevention or modification of the disease in children up to eighteen months of age.

Meningitis Epidemic (Meningococcus)

Incidence in Minnesota: 147 cases in 1943 with 19 deaths (increasing).

Diagnostic tests: If meningeal symptoms are present, spinal fluids should be taken immediately and transported by the quickest method possible to the Preventable Diseases Laboratories. Meningococci are very fragile and may disintegrate in a few hours. If a moderate number or many polymorphonuclear leukocytes and no meningococcus are found on examination the presumptive evidence is that the infecting organism is meningococcus, i.e., if no other organisms are found, the patient should be considered to have meningococcus meningitis. In other words, if the infecting organism is pneumococcus, streptococcus or Hemophilus influenza many organisms will be present in the spinal fluid. In certain cases of meningococcus infections, the infection remains a bacteremia and the patient does not develop meningeal symptoms. Such infections may be fulminating or may be chronic. In instances of blood stream infection without meningeal symptoms send blood cultures to our Laboratories (suitable medium will be furnished). If facilities are available, blood cultures should be done locally since the organisms do not stand transportation well.

Active Immunization: None

Passive Immunization: None

Treatment: Sulfadiazine at present is usually the drug of choice. For the adult, a total of 12 grams should be given in the first twenty-four hours; 6 grams of a 1 per cent solution in physiological saline of the sodium salt intravenously and 6 grams subcutaneously in 1 per cent distilled water. If sulfamerazine is used, the dosage is reduced by one-half. After the first twenty-four hours reduce the dose of sulfadiazine to 3 to 6 grams per twenty-four hours. This should keep the drug at a blood level of 15 to 20 mg. per c.c. The information is given in case there is no way of determining the blood level of the drug. The amount of drug given should be reduced in children according to their weight.

Antimeningococcus antitoxin or antiserum should be used if the patient does not appear to be responding to sulfa drugs. Do not delay too long. *Use all usual* precautions of testing for sensitivity before giving serum. Dosage varies with potency of the preparation and with severity of symptoms in the patient. It is no longer considered good practice to give either sulfa drugs, antitoxin or antiserum by the intrathecal route in meningococcus meningitis. The dose of antitoxin may vary from 20,000 to 100,000 intravenously given in from 120 to 200 c.c. or more of 10 per cent glucose solution. The total antibody should be given in two hours. A child may not require more than 20,000 units. It must be remembered that the aim is to build up an excess of antibodies in the patient's body whether this is accomplished actively or passively. The same general directions may be used for antiserum, but it must be again emphasized that potency varies with the manufacturer. If both sulfa drugs and antibody fail, penicillin may be tried if it can be procured. The initial dose is 75,000 units intravenously the first day followed by 10,000 units every three hours intramuscularly, and with the intramuscular doses two doses of 5,000-10,000 units each are given daily intrathecally.

Prevention: Usual control measures. The epidemiology of epidemic meningitis is not understood. Sulfa drugs can be used to relieve the carrier state but according to army studies, this is only a temporary measure lasting from two to three weeks. Meningococcus antitoxin and antiserum furnished by the Division of Preventable Diseases.

Meningitis, Hemophilus Influenzæ Type B

Incidence in Minnesota: 30 cases, 22 deaths in 1942. 1943 figures not complete.

Diagnostic tests: Send spinal fluid by quickest method to Division Laboratories where it will be typed to determine whether Hemophilus Influenzæ Type B is the causative organism. This is a very rapid method similar to the Neufeld typing in pneumonia. Since influenzal meningitis is highly fatal when not treated (95 per cent) early, *night service* will be given if necessary.

Active Immunization: None

Passive Immunization: None

Treatment: A combination of sulfa drugs (sulfadiazine is now usually the drug of choice) together with Anti-Hemophilus Influenzæ Type B serum is used. The same is prepared only by Squibbs and directions are so clearly given that in the opinion of the committee it is not essential to give detailed directions here for the administration of the sulfa drug or the antiserum. It should be added that the committee realizes that many country practitioners are in no position to make sugar determinations on spinal fluid as suggested in the printed directions; the amount of sugar present being used as an index for the amount of Anti-Hemophilus Influenzæ B serum which is to be given. However, the average dose for a child two years or under is two vials of the antiserum plus sulfa drugs as directed.

Prevention: Not understood. Hemophilus Influenzæ Meningitis is a disease of infancy, as around 80 per cent occurs in children under two years of age. The epidemiology is not understood but present knowledge would indicate that since Hemophilus Influenzæ is a common inhabitant of the upper respiratory tract in healthy persons that the high occurrence of the disease in small children is a matter of lack of resistance and perhaps to a lesser extent variation in virulence of the organism. Anti-Hemophilus Influenzæ Type B serum, distributed by the Division of Preventable Diseases.

Meningitis, Pneumococcus

Incidence in Minnesota: 11 cases reported in 1943 with 4 deaths.

Diagnostic Tests: Send spinal fluid to Division Laboratories for typing. Telephonic report will be given, and night service if necessary.

Active Immunization: None

Passive Immunization: None

Treatment: The treatment with sulfa drugs is as outlined under Meningococcus meningitis. At the same time, the specific serum should be given by the intravenous route, beginning with 100,000 units and more is given if the patient does not respond. Penicillin, if it can be procured, is given as outlined under Meningococcus meningitis.

Prevention: This disease often appears as a complication of pneumonia or middle ear infection, and meningitis in some instances may be avoided if the primary infections are treated early and adequately.

Pertussis (Whooping Cough)

Incidence in Minnesota: Variable but not known, as not well reported; 3,470 cases with 28 deaths reported in 1943.

Diagnostic Tests: Cough plate or nasal swab methods are the ones of choice if laboratory facilities are available. *These methods require experience and fresh media.* Positive cultures may be expected in 70 to 90 per cent of the cases in the catarrhal period. A single negative culture does not rule out the disease. It has been proven that cultures give good results if shipped from a distance, but our Laboratories do not have sufficient staff to carry out this work. Of important diagnostic value also is a leucocytosis of from 15,000 to 40,000 per c.c. with a progressive increase in the absolute number of lymphocytes. This occurs in the late catarrhal or early spasmodic stage.

Active Immunization: This should be especially

stressed in whooping cough as there is definite evidence that it does in some instances prevent the disease and in many others it lightens the attack. Since the majority of pertussis deaths occur in children under one year, immunization should be begun early, preferably at six months. It is to be hoped that soon a vaccine will be developed that will be effective earlier than six months.

Passive Immunization: Best results are obtained when Pertussis Hyper-Immune Serum is given early in the incubation period. A dose of 20 c.c. is advised in children under four years of age and the same dosage in children four years and older.

Treatment: Pertussis Hyper-Immune Serum appears to be of value in the treatment of the disease, if administered early. The serum should be given in 20 c.c. amounts, preferably intravenously at two- and three-day intervals until three doses have been given. If there is no improvement after the third injection, it is questionable whether further injections will be of benefit. If improvement follows the second or third dose, one or two additional doses probably should be given at five- to seven-day intervals in order to prevent a relapse of the disease.

Prevention: Early immunization should be carried out. It is realized that more atypical cases will occur with a highly immunized child population, but since the disease is not well reported, and therefore not placed under proper control measures, the committee is of the opinion that a well immunized population will mean a great decrease in deaths and cases. Pertussis Vaccine "Sauer" for active immunization is distributed by the Division of Preventable Diseases for use in children under two years. Pertussis Hyper-Immune Serum for passive immunization is distributed by the Division of Preventable Diseases for children under eighteen months of age.

Pneumonia (Pneumococcus)

Incidence in Minnesota: 2,345 cases with 690 deaths reported in 1943.

Diagnostic Tests: Send sputum or gastric contents in infants to Preventable Disease Laboratories for typing if local facilities are not available. Typing is not as important as a few years ago, for since the advent of sulfa drugs many patients respond without the use of serum. In other words, typing is usually not an emergency. Blood cultures should be taken if local laboratory facilities are available, but our Laboratories are carrying on very little blood culture work since the organisms do not survive well in shipped cultures. *Warning:* It is often difficult to type pneumococcus after sulfa drugs have been given, although in cases of necessity typing should be attempted.

Active Immunization: Has been tried but not successful to date.

Passive Immunization: None

Treatment: Sulfadiazine at present is apparently the drug of choice. The initial adult dose should be 2 to 4 gms. by mouth followed by one gm. every four hours day and night until the infection is under control. (In children dosage should be reduced according to weight). The latter dosage is usually continued for twenty-four to seventy-two hours after the temperature has reached normal. The drug may be discontinued then or cut to half the latter dose, or the same amount can be continued every six to eight hours instead of every four hours. As a rule it is safe to discontinue the drug twenty-four hours after half doses. In severe infections with complications, it is advisable to give full doses of drug for five to six days after the temperature reaches normal. If the patient does not respond to sulfa drugs in twenty-four to forty-eight hours, or is unable to take sulfa drugs, serum should be tried. Although many statistics have been published, the committee wishes to emphasize that a final answer to the sulfa versus serum question cannot be given at present. Serum should be given intravenously and in adequate doses. In an adult twenty-five to thirty-five years of age, 100,000 units should suffice in an uncomplicated pneumonia. The required dosage increases with age, with delayed treatment, with extensive involvement, bacteremia, and pregnancy.

Prevention: Prevention if possible of upper respiratory infections due to undue exposure, fatigue, et cetera. Pneumococcus Pneumonia Serum distributed by the Division of Preventable Diseases.

Smallpox

Incidence in Minnesota: No cases in 1943. Cases may be expected at any time if the public is not continuously impressed with the value of immunization since vaccination is not compulsory in this State.

Diagnostic Tests: There is no practical test which may be used in the ordinary laboratory. If the physician is in doubt as to the diagnosis, the patient should be vaccinated if there is no history of successful vaccination.

Active Immunization: The method of choice is the virus of cowpox preserved by glycerination of lymph from inoculated calves. There is not sufficient experience in epidemics with the tissue culture method of making vaccine of Rivers and Goodpasture to warrant advising its use as a standard procedure at present. *Babies* should have the first successful vaccination by the first birthday. Vaccination should be repeated every five years or more often if an epidemic occurs.

Passive Immunization: None

Treatment: No specific biologic.

Prevention: Successful vaccination of every baby by the first birthday. Repeated vaccination every five years and more often during epidemics. Glycerinated smallpox vaccine distributed by the Division of Preventable Diseases.

Tuberculosis

Incidence in Minnesota: 2,345 cases with 690 deaths in 1943 (decreasing).

Diagnostic Tests:

1. All types of body fluids, including sputum, gastric contents, pleural fluid, spinal fluid, et cetera, are examined in the Preventable Disease Laboratories. Do *not* send specimens of voided urine. If possible, specimens taken from the ureter should be sent, but if this cannot be done, catheterized specimens collected by sterile technique will be accepted. In a suspected case

of tuberculosis, several microscopic examinations should be made of morning sputum if patient is raising, and these should be made before cultures are requested. If patient is not raising or is not coöperative gastric contents should be collected. (Special directions will be sent upon request for collection and shipping of such specimens). If typical acid-fast organisms are found on macroscopic examination of sputum, it is not usually considered necessary to carry out cultures or animal tests. If atypical organisms are found or organisms are found in other body fluids in patients in whom there have been no previous positive laboratory findings, virulence tests are always carried out in animals. It is important to use bottle furnished by our laboratories for pleural fluid specimens so that as much of the clot will be retained as possible. This is mentioned because we receive many pleural fluid specimens in Wassermann containers which no doubt accounts for missed diagnoses at times.

2. Tuberculin Test: 0.1 c.c. of a 1:1,000 dilution of old tuberculin applied intradermally is probably the most widely used test in this country. Purified protein derivative is the most accurate test material available, but it is much more expensive. Some physicians prefer to begin with a 1:10,000 dilution of old tuberculin as it is a little safer in case there should be an occasional severe reaction with the 1:1,000 dilution. However, the 1:10,000 dilution is used as a rule only in selected cases. The 1:100 dilution should be used with caution. The tuberculin test is usually read in forty-eight hours but should not be considered negative until seventy-two hours have elapsed. It is well known that in rare instances the tuberculin test is negative in active tuberculosis.

3. The Patch test has been quite widely advertised the past few years as a more convenient method than the tuberculin (Mantoux) test. It is more expensive. There are several obvious reasons why it may not be as accurate as the Mantoux test; if the patient is a child or irresponsible, the patch may not be left in place. It does not work well on a dry skin; there is always the possibility that it may not penetrate through different types of skins and therefore would have possibilities of inaccuracies which the intracutaneous test does not have.

Active Immunization: B. C. G. should not be recommended at the present time.

Passive Immunization: None

Treatment: No specific biologic to date. Old tuberculin 1-1,000 and 1-10,000; 1-100 for special cases, distributed by the Division of Preventable Diseases.

Typhoid Fever

Incidence in Minnesota: 15 cases with no deaths in 1943 (decreasing).

Diagnostic Tests:

1. Isolation of the organism is the method of choice and is becoming more important with the great increase in vaccinated persons. Blood cultures are usually positive from the first few days until about the beginning of the second week in about 90 per cent of cases. Later the organism can be isolated usually from the stools and occasionally from the urine. If stools are negative, repeated specimens should be done. The above work is done by the Preventable Disease Laboratories and outfits are furnished.

2. Agglutination tests: These tests should be carried out but may be very difficult to interpret if the patient is an adult. Specimens should be repeated as a rise in titre is usually significant. An agglutination titre of 1:80 with typhoid bacilli or above in a child is usually significant. One must always consider that the patient may be suffering from a related infection such as paratyphoid, enteriditis, bacillary dysentery, or some member of the salmonella group.

Active Immunization: Triple typhoid vaccine made according to Army medical school standards is the method of choice rather than straight typhoid vaccine, i.e., vaccine should be used in which both paratyphoid organisms as well as typhoid are incorporated. This is becoming more important since it appears that there is more increase in salmonella infections in the United States and triple typhoid vaccine should give some protection against the salmonella group. Because of the low incidence of typhoid and paratyphoid in Minnesota, general vaccination is not advocated. The first immunization to typhoid and paratyphoid fever consists of three doses of triple vaccine given subcutaneously. In the past few years experimental work has demonstrated that after the first immunization, one step-up dose of 0.1 c.c. intracutaneously every two years is as effective as three full doses of vaccine.

Passive Immunization: None

Treatment: No specific biologic successful.

Prevention: Sanitary control of water supplies and sewage disposal, use of pasteurized milk, control of temporary and chronic carriers.

Triple and plain typhoid vaccine distributed by the Division of Preventable Diseases.

ETERNAL VIGILANCE

This is the time of year when the commoner communicable diseases are apt to dominate the medical scene. Johnny breaks out with a rash; Mary has a suspicious parotid swelling; Jimmy's throat is red and sore; Dad has a chest cold that will bear watching for possible pneumonia. Suddenly these troubles bubble up; furiously they boil; generally they cool with equal rapidity. But there is one common communicable disease that seldom flaunts a rash, that does not start with a high fever, that fails to herald its approach by means of sore throat, overwhelming malaise, violent headache or major digestive upset. That disease is tuberculosis, and the time of the year to watch out for it is exactly twelve months long!

CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

J. B. Arey, M.D., Pathologist

Presentation of a Case

Dr. Goltz: The case is that of a seventy-six-year-old Jewish male admitted to Minneapolis General Hospital, January 26, 1944. The history was obtained with great difficulty because of his inability to speak English. The day prior to admission he experienced sudden severe pain in the chest and abdomen with rather severe dyspnea. These complaints increased in intensity, and he was admitted to the hospital at 9:00 P.M. January 26, 1944. No definite localization of the pain to one side or another could be determined; there was no radiation to the shoulders or arms, and no definite aggravation on respiration was remarked.

Past history revealed several previous admissions to the hospital with complaints irrelevant to the present admission. On one occasion it was noted that he had suffered from bronchial asthma for a number of years with resultant emphysema. His blood pressure in 1941 was 170/88.

Physical examination on the last admission revealed a rather emaciated old man with a blood pressure of 176/100, pulse 96, temperature 98.4 and respirations 28. No orthopnea was noted, but the respirations were distinctly labored and he complained of considerable pain in his chest (not localized). Physical examination was essentially negative except for the chest. There was a loud expiratory groan heard throughout the chest and obscuring the physical findings on auscultation. No abnormalities in the breath sounds could be noted, and occasional inspiratory râles were audible over an area in the left lower chest anteriorly and posteriorly. Percussion revealed a resonant note on both sides, with a somewhat diminished note over the aforementioned area in the left lower chest. The cardiac rhythm was regular. There was a short diastolic murmur at the base.

Laboratory examination showed a negative Rytz and Kline test. The hemoglobin was 87 per cent, white blood count 22,900 with 84 per cent neutrophiles, 14 per cent lymphocytes and 2 per cent monocytes. The urinalysis showed nothing of note. X-ray (not read until after the patient's death) showed a prominent left ventricle with the heart somewhat displaced to the left. There was a right pneumothorax (60 per cent collapse of the right lung), and a suggestion of fluid at the left base. The lung field on the left was clear.

The patient was treated with morphine grains 1/6 and atropin grains 1/150, and an oxygen mask. He continued to suffer from progressive dyspnea, became very cyanotic, his pulse became irregular and he died at 11:35 A.M. January 27, 1944, in spite of stimulants.

Dr. Taylor: The pertinent autopsy findings were largely limited to the chest. On opening the chest, air was heard escaping from the right pleural cavity. The mediastinum was shifted slightly to the left. The right lung was flattened against the mediastinum at all points except the apex, where a group of fibrous, band-like adhesions between the parietal and visceral pleura prevented collapse of this area. No air could be detected escaping from the left pleural cavity. The latter contained approximately 400 c.c. of frank blood and clots. There was a clot 6 x 4 x 4 cm. in the interlobar fissure, somewhat adherent to the adjacent visceral pleura. The parietal pleura was intact on both sides.

Each lung weighed 570 grams. There were a number of subpleural emphysematous blebs, up to 2 to 3 cm. in diameter, on the surfaces of both lungs. On incising these blebs, considerable portions of the adjacent pulmonary parenchyma would collapse. The exact source of the right pneumothorax could not be found. Section of the right lung showed almost complete atelectasis, with the exception of a small area at the apex. There was atelectasis of the inferior portion of the left upper lobe (adjacent to the aforementioned clot in the interlobar fissure). The remainder of the left lung showed nothing of note. The bleeding point could not be determined. No definite emphysema was visible in the parenchyma of either lung. The parietal pleura was intact on both sides.

The heart weighed 310 grams. Except for slight calcification of the base of the aortic valve and moderately severe sclerosis of the coronary arteries, it showed no significant abnormalities.

The gall bladder was reduced to a thickened, fibrous sac, 2 x 5 cm. containing three stones and a small amount of bile. Distal to the tip of this sac was a bulbous fibrous tissue mass containing cholesterol crystals. This was bound to the surface of the liver by dense fibrous adhesions, and apparently represented the fundus of the gall bladder. The remainder of the organs showed no significant abnormalities.

Microscopic Findings

Dr. Arey: Here is a section of the left lung taken from the interlobar fissure in an attempt to find the source of the hemorrhage. Note the rather extensive bronchiectasis, with dilated bronchi filled with purulent material. There is extensive chronic inflammatory infiltrate in the walls of these bronchial cavities. Adjacent to the dilated bronchi is a chronic pneumonia, such as is found so commonly in bronchiectatic lungs. Here is another section of the left lung taken from the same region. There is considerable hemorrhage in the alveoli, with atelectasis adjacent to this. Although this is un-

doubtedly near the point of origin of the left hemothorax, we have been unable to definitely demonstrate the point from which the hemorrhage came.

These sections of the right lung all show a similar structure. Note the marked atelectasis, with complete collapse of the alveolar septa and resultant disappearance of the alveolar spaces. There is nothing to suggest tuberculosis in any of these sections, nor are we able to demonstrate any emphysema.

Here is a section of the gall bladder. There is extensive fibrosis and inflammatory infiltrate in the wall, as well as a large number of cholesterol crystals. About the latter is considerable foreign body reaction, with large numbers of giant cells.

Discussion

DR. AREY: I would like to say a few words about spontaneous pneumothorax in the apparently healthy individual. It should be emphasized that I am referring to this condition in the previously healthy individual, not as a complication of trauma, tuberculosis or chronic emphysema. I have been unable to find any report as to the incidence of spontaneous pneumothorax following either tuberculosis or emphysema. However, most authors at the present time seem to feel that spontaneous pneumothorax occurs more frequently in the previously healthy individual than as a complication of tuberculosis or emphysema. This is in distinct contrast to the figures given in the older literature, when 70 to 90 per cent of the cases were considered tuberculous in origin.

The pathogenesis of this lesion is interesting. Kjaergaard and Ornstein and Lercher agree that the pneumothoraces result from the rupture of a subpleural emphysematous bleb, this bleb having a check-valve mechanism which prevents the release of its air on expiration, but allows its filling on inspiration. This check-valve may be formed either by scar tissue or by local emphysematous pulmonary parenchyma.

Ornstein and Lercher have well demonstrated the reason for the frequent occurrence of the subpleural blebs in the apices. By means of repeated x-rays, they show that a large portion of the air in the lungs is forced into the apices in coughing and in severe exertion associated with closing of the glottis. This rushing of air into the apices may result in rupture of the superficial alveolar septa, with the formation of emphysematous blebs in the areolar layer of the pleura. The additional factor of the check-valve mechanism has already been mentioned.

As to the incidence of spontaneous pneumothorax in the apparently healthy individual, a few figures are available. Santos and Tanchanco found an incidence of .11 per cent in 50,000 chest examinations. Kjaergaard was able to collect fifty-one cases in Denmark over a period of 20 years. Ornstein and Lercher reported fifty-eight cases in 1942. Stein, McConkie and Kuehn reported five cases in 1943. Thus it would seem that the entity is of suffcient frequency to warrant careful clinical consideration.

All authors agree that the incidence of spontaneous pneumothorax in the healthy individual is more frequent in the younger age groups, usually in the second, third and fourth decades. There is a definite preponderance of men over women, some authors giving a ratio as low as two to one, and Ornstein and Lercher finding only two of fifty-eight cases in women.

The characteristic symptoms are sudden severe pain in the chest associated with dyspnea. The pain is aggravated by respiration, and is usually on the affected side, may radiate to the shoulder and arm. Abdominal pain associated with rigidity may rarely occur, simulating a perforated gastric ulcer. The dyspnea is said to be originally reflex in character, later may be the result of actual respiratory embarrassment.

Other symptoms occur less frequently than the cardinal symptoms of pain and dyspnea—cyanosis, cough (rarely associated with blood-tinged sputum), palpitation, fainting, pallor and vomiting may occur.

The physical findings depend upon the amount of air in the pleural cavity, and with larger amounts are quite characteristic. With considerable air in the pleural cavity, there is splinting of the affected side and bulging of the interspaces. Tactile and vocal fremitus are decreased to absent, a hyperresonant note is present on percussion, and the breath sounds on the affected side are decreased or absent. With small amounts of air the findings may be absent or limited to the apex. These small pneumothoraces may only be discovered on x-ray examination, the x-ray preferably being taken in the expiratory position.

Other types and complications of spontaneous pneumothorax are reported. Chronic pneumothorax may be present over as long a period as twenty years (Kjaergaard). It is characterized by very slight subjective symptoms associated with a rather marked pneumothorax on x-ray examination. These cases may be erroneously diagnosed as situs inversus.

Hemopneumothorax is a very serious problem, and fortunately is not common. The physical findings are those of a spontaneous pneumothorax associated with fluid in the pleural cavity and signs of internal hemorrhage. The latter usually do not appear for several hours after the rupture. These cases are especially prone to simulate intra-abdominal conditions.

Bilateral pneumothorax is another serious complication. These probably all start with unilateral involvement, but the opposite side may be affected while the original lung is still collapsed. These cases may require immediate aspiration of air from the pleural cavity (preferably the side originally affected) to prevent immediate suffocation.

Alternating pneumothorax consists of those cases in which a pneumothorax occurs on the opposite side after recovery from a previous spontaneous pneumothorax. These cases are rare, the second attack usually occurring some months or about one year after the first attack.

Recurrence of spontaneous pneumothorax is not rare. Kjaergaard gives an incidence of about 20 per cent recurrences, and Ornstein and Lercher 29.8 per cent. They report two cases that had eight attacks, either the same or the opposite lung being affected. In over 50 per cent of Kjaergaard's recurrences, the subsequent pneumothorax appeared within one year.

The differential diagnoses of spontaneous pneumothorax include cardiac conditions, pneumonia, pleurisy and perforated abdominal viscus. The differential diagnosis can usuallly be made by a careful history and physical examination. X-ray is of invaluable aid, and may be the only method of making a diagnosis with small pneumothoraces. The film should preferably be taken in the expiratory position, as this more readily reveals small amounts of air in the pleural space.

The treatment of spontaneous pneumothorax is usually confined to bed rest, possibly with sedation. Reexpansion of the lung will usually occur within four to six weeks. In severe forms, as bilateral tension pneumothorax, it may be necessary to immediately aspirate air from the pleural cavity in order to prevent suffocation. As mentioned, aspiration should be begun on the side first affected in bilateral pneumothorax.

The prognosis in these cases is as a rule excellent. Kjaergaard mentions only six deaths collected from the literature. One of these was a tension pneumothorax, four hemopneumothoraces, and one a bilateral pneumothorax. Kjaergaard followed forty-nine cases over a number of years and only one subsequently developed pulmonary tuberculosis, evidently a later infection. Of Ornstein and Lercher's fifty-eight cases, three subsequently developed pulmonary tuberculosis. The presence of adhesions or fluid demonstrable on physical ex-

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CLINICAL-PATHOLOGICAL CONFERENCE

ST. LUKE'S HOSPITAL—DULUTH

Arthur H. Wells, M.D., Pathologist

Presentation of a Case

Dr. J. R. Manley: This thirty-two-year-old housewife, gravida 0, with a blood pressure of 150/80 and 4 plus albumin in the urine was delivered spontaneously of a full-term stillborn after seven hours of labor. An episiotomy was repaired and the placenta expressed without difficulty with an estimated total loss of from 800 to 1,000 c.c. of blood. At first the uterus did not contract properly but after pituitrin and ergotrate this condition soon appeared to be corrected. However, there was a slow continuous oozing of blood from the uterus. Forty-five minutes postpartum the pulse was 100 and weak, blood pressure 80/60 and the patient's color was poor. Oxygen therapy was started and one unit (250 c.c.) of plasma was given at this time. One hour postpartum the oozing was continuing so the uterus was packed and a unit (500 c.c.) of "bank" blood was given. At an hour and fifteen minutes postpartum the continuous oozing was again noted and two more units of "bank" blood were given. The uterus was repacked on two occasions to no avail. It was noted that there were no blood clots passed and that blood collected in a basin in the delivery room stood two hours without clotting. The patient died four hours postpartum, clinically as the result of exsanguination.

Autopsy Findings

Dr. A. H. Wells: There were moderate evidences of toxic changes in the liver, myocardium, spleen and kidneys. The liver had many tiny hemorrhages on its unusually yellow cut surface. There were three small lacerations in the cervix which were considered by the obstetrician to be the result of packing the uterus on the third occasion. A serious depletion in blood volume was noted.

Microscopic Study.—There were moderately extensive hemorrhages and degenerative changes in liver cells in the periportal areas of the liver typical of changes occurring in eclampsia. Prothrombin time taken 1.5 hours postmortem was found to be 0.1 per cent of normal. At this time the platelet count was 90,000 and a check count was 100,000. The blood clotting time was 20 minutes. Fibrinogen content of plasma was not measured.

It is my theory that this patient bled to death following a spontaneous normal delivery as the result of a depletion of blood prothrombin consequent to the inability of her liver to manufacture prothrombin. The liver had moderately extensive changes pathognomonic of eclampsia.

Dr. R. J. Moe: Eclampsia is toxemia with convulsions and this patient apparently had no convulsions.

Dr. A. H. Wells: I should have said the liver changes are pathognomonic of toxemia of pregnancy. Convulsions or eclampsia of course are frequent terminal manifestations of this condition.

Dr. F. R. Peterson: Did the patient receive vitamin K prior to labor?

Dr. J. R. Manley: She received hykinone one week before delivery. It is entirely possible that the liver could not convert it to prothrombin.

Dr. G. J. Hruska: Does blood stored in the icebox provide prothrombin?

Dr. A. H. Wells: Several investigations have shown that prothrombin, platelets and fibrinogen disappear quite rapidly from stored blood. Fresh blood alone could be counted upon to supply prothrombin in a patient with a badly damaged liver. Stored blood provides simply red blood cells, blood proteins, salts and fluid.

Dr. F. R. Peterson: How frequent is this type of bleeding dyscrasia?

Dr. A. H. Wells: As you well know severe diffuse liver injury in a variety of conditions will at times lead to bleeding from various parts of the body. This bleeding may be theoretically due to the inability of the liver to manufacture either prothrombin or fibrinogen. I have contacted J. R. McKelvey, A. J. Quick, I. Davidsohn, and A. S. Wiener and none of these men have heard of toxemia of pregnancy causing a bleeding dyscrasia.

Since the death of this patient we have routinely run prothrombin time and bleeding time tests on patients with toxemia of pregnancy. To date there have been eight such patients most of whom had received Vitamin K and all of whom were in the normal range for these tests, except in one instance. Dr. Braverman, will you give us a brief review of this patient's history?

Dr. N. J. Braverman: This thirty-six-year-old para II housewife had followed a normal prenatal course until one week before her death. She then rapidly developed severe headache, epigastric pain, dizziness, blurred vision, edema of legs, vomiting, albuminuria grade IV, and many red blood cells in the urine. Her hemoglobin was 13 grams per 100 c.c., white blood cells 21,500, red blood cells 4,280,000, and the differential blood count had 89 per cent neutrophiles. There was a systolic cardiac murmur and an occasional uterine contraction at the time of admission to the hospital. The prothrombin time was 9 per cent normal or 124 seconds. Therapy for toxemia of pregnancy including morphine sulphate and magnesium sulphate given intravenously was started. Five minutes before death the blood pressure was 210/140. Her respirations suddenly became hoarse and cyanosis developed. The intern, Dr. Hruska, watched a very rapidly developing swelling in the neck mainly to the left of the midline. He tried

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CASE REPORT

RECURRING RETROPERITONEAL FIBROMYXOSARCOMA

CLAUDE F. DIXON, M.D., and JAMES L. VADHEIM, M.D.
Rochester, Minnesota

THE surgeon is often confronted with the problem of whether or not to attempt the removal of a seemingly inoperable malignant lesion. Every now and then he is rewarded for his efforts by an excellent result in what was apparently a hopeless situation. We wish to present just such a case in which a retroperitoneal fibromyxosarcoma which was adherent to the vena cava was removed and the patient lived comfortably for eight years, only to return with a recurrence in the identical region. The recurrent lesion was also adherent to the vena cava but again it was possible to remove the sarcoma and again the patient obtained an excellent result.

The patient, a white man, aged fifty-five years, was first registered at the Mayo Clinic in 1935. At that time he gave a history of gradually increasing weakness of five months' duration, a loss of about 12 pounds (5.4 kg.) and a mass in the right side of his abdomen which he had discovered three weeks prior to examination. One week prior to examination he was forced to give up his work because of weakness. Examination revealed a moderately well-nourished white man, who had a hard nodular mass the size of a grapefruit in the right side of the abdomen. The mass was freely movable and could be separated from the liver and kidney. Intravenous urograms were normal. On August 27, 1935, exploration was carried out through a right rectus incision. The colon was reflected medially and a tumor the size of a large grapefruit was removed from the region of the right kidney. The procedure was extremely difficult as the growth was firmly adherent to the vena cava and it was necessary to leave three clamps on the border of this vessel to control bleeding following the resection. These clamps were loosened on the fourth postoperative day and subsequently removed on the sixth and seventh postoperative days. The pathologist reported a fibromyxosarcoma 15 cm. in diameter and weighing 880 gm. The postoperative course was uneventful. The patient was dismissed from the hospital on the fourteenth day and after a course of roentgen therapy went home.

Following dismissal the patient continued to get along well until February, 1943, when he again noticed weakness and a loss of appetite. One week prior to readmission he again noticed a mass in the righ side of his abdomen. He was examined on March 17, 1943, at which time he again exhibited a mass the size of an orange in the right middle portion of the abdomen. His weight was 24 pounds (10.9 kg.) less than his usual weight and he appeared to be very weak. The mass at that time was freely movable and did not seem to be attached to the liver or kidney. On April 2, 1943, exploration was performed through a secondary upper right rectus incision. Just below the hepatic flexure of the colon was a hard irregular tumor about twice the size of an adult's fist. The tumor involved the mesentery and ascending colon and for that reason a resection of the right portion of the colon was performed. The terminal ileum, the cecum, and ascending colon and two-thirds of the transverse colon were removed and because of the patient's poor condition it was deemed advisable to conclude the procedure as an exteriorization over a clamp. The dissection again was extremely difficult as the tumor was adherent to the vena cava for some distance and it was necessary to resect a portion of the anterior wall of the vena cava in three separate areas. These defects were closed with double chromic catgut ties and only a minimal amount of bleeding occurred. The pathologist reported 25 cm. of ileum, appendix, 25 cm. of cecum and colon and a fibromyxosarcoma measuring 13 by 8 by 5 cm. and invading the ascending colon (Fig. 1). No glandular involvement was found.



Fig. 1. Fibromyxosarcoma of the ascending colon.

The postoperative course was uneventful and the patient was dismissed from the hospital on the fifteenth postoperative day. Subsequently, the colostomy spur was destroyed with clamps and the colonic stoma closed. At the time of dismissal the patient appeared to be in excellent condition.

From the Division of Surgery, Mayo Clinic (Dixon) and the Mayo Foundation (Vadheim, Fellow in Surgery), Rochester, Minnesota.

HISTORY OF MEDICINE IN DODGE COUNTY

BY JAMES ECKMAN
Rochester, Minnesota

and

CHARLES E. BIGELOW, M.D.
Dodge Center, Minnesota

(Continued from February issue)

Dr. William M. Edgerton (1870-1939) was born at Mantorville in Dodge County on May 27, 1870,[365] the son of Alonzo Jay Edgerton of New York (1827-1896) and Sarah Curtis Edgerton, of Connecticut.[366] Doctor Edgerton's parents had settled in Mantorville in the summer of 1855,[366] when the town was nothing more than a cluster of settlers' shanties. The father, a lawyer, became a Minnesotan of some renown. He was a member of the Minnesota State Senate in 1858 and 1859, was awarded the rank of brevet brigadier general in the War of the Rebellion, and was United States Senator from Minnesota from March 12 to October 30, 1881.[367] Later he was chief justice of the Supreme Court of the Territory of Dakota.

Young Edgerton was educated in the public schools of Mitchell in South Dakota, and became a student at the South Dakota State College at Brookings, where he began the study of medicine with Dr. Granville J. Coller (1854-) as preceptor. He was graduated from the University of Minnesota College of Medicine and Surgery in 1896, and was licensed to practice medicine in Minnesota on June 9 of the same year.[40] In the same summer[156] he located at Claremont in Dodge County, where he remained for about two years. On December 26, 1896, he was married to Miss Alta Andrews (1871-1934) of Faulkton, South Dakota.[365] In 1898 he was licensed to practice medicine in South Dakota, and he settled at Faulkton. On January 13, 1905, Doctor Edgerton was nominated by Dr. Hiram E. McNutt (1848-1923) of Aberdeen to be an examiner for the Equitable Life Assurance Society of the United States, and recommended for the position by Dr. Francis M. Crain (1857-1934) of Redfield and others.[368] Doctor Edgerton had been local surgeon at Faulkton for the Chicago and Northwestern Railway Company, superintendent of the Faulk County Board of Health and a United States pension examiner. The appointment was made, and Doctor Edgerton remained in the employ of the assurance society at Faulkton until 1914, when he moved to Merriam Park in Ramsey County, Minnesota, where he served as an examiner from December 24, 1914, until July of 1920. In that year he moved his residence to Minneapolis, but maintained his office at Saint Paul. On July 29, 1920, he became an alternate examiner for the company at Saint Paul, and on July 1, 1921, he was appointed to be a medical referee of the company, in charge of all examiners in Minnesota, North Dakota and South Dakota.[368] He held this post until he retired on November 1, 1938, and he died at Minneapolis on August 4, 1939, of coronary sclerosis at the age of sixty-nine years.[369, 370]

Dr. John Andrew Sorg (1869-1898) was a classmate of Dr. William M. Edgerton (1870-1939) and Dr. Lewis L. Mayland (1871-) in the University of Minnesota College of Medicine and Surgery, from which he was graduated in 1896. Doctor Sorg was born in Denmark Township, Washington County, Minnesota, the son of Michael Sorg and Emma Traeger Sorg.[371] Both his parents were natives of Germany. The young man was educated in the rural schools of Washington and Dakota Counties, and on June 7, 1889, was graduated from the Hastings High School. He then taught school for two years in Dakota County and one year in Washington County. During summer vacations he worked in Skinner's Drug Store in Minneapolis, and at some time between 1889 and 1892 he was graduated from the old Minnesota Institute of Pharmacy[371] conducted in Minneapolis by Charles W. Drew, M.D., Ph.D. (1858-1920), who had been assistant to the chair of chemistry in the old Minnesota College Hospital,[91,92] and city physician of Minneapolis in 1884 and 1885.[336]

Doctor Sorg was graduated as a physician in 1896, and was licensed to practice medicine in Minnesota on June 9, 1896, receiving License No. 712.[40] At about that time he came to Kasson in Dodge County, but he probably did not remain there long, for Welch[371] believed Doctor Sorg was settled in North Dakota by 1896. He was licensed to practice medicine in North Dakota on April 14, 1898,[158] and at the time he gave his residence as Ellendale in Dickey County, although Welch[371] has said that he also practiced in Kulm in La Moure County. Doctor Sorg died of pneumonia in Ellendale on May 4, 1898, and was buried in Lakeside Cemetery in Hastings, Minnesota. He was a member of the Odd Fellows, Ancient Order of United Workmen, Woodmen of the World and the Knights of Pythias. He was never married. Welch[371] reported that Doctor Sorg was very fond of singing, and that as a teacher he was instrumental in getting young people to attend high school and college if it was at all possible for them to do so.

Dr. George Ranson (1871-1899), the eldest son of Dr. Stephen W. Ranson (1843-1904) and Mary Elizabeth Foster Ranson of Dodge Center,[233] was born in Dodge Center on July 11, 1871. He was reared in the town and was graduated from the Dodge Center High School. He attended Hamline University in Saint Paul for a while, then entered the University of Minnesota College of Medicine and Surgery, from which he was graduated in 1895. He was licensed to practice medicine in Minnesota on June 11, 1895, receiving License No. 564.[40] After he had completed a year's internship at Saint Joseph's Hospital in Saint Paul, Doctor Ranson returned to Dodge Center to practice medicine with his father. In March of 1898 he bought the practice of the late Dr. Daniel B. Collins (1848-1898) of Saint Peter who had died on February 14, and he settled in that town. In January of 1899 he was married to Miss Mary Jones of Saint Paul.[372] Doctor Ranson had been in Saint Peter for only a little more than a year when suddenly, while apparently in excellent health, he collapsed and died within the hour, on June 8, 1899. He was only twenty-eight years old at his death.

Dr. Lewis L. Mayland (1871-), who came to Hayfield in Dodge County in December of 1896, was born on a farm in Goodhue County, Minnesota, on October 13, 1871, the son of Lars A. Mayland (1826-1893) and Uni Thorsnes Mayland (1829-1906).[160] His father, a native of Norway, was a farmer. His mother also was a native of Norway. The boy attended the public schools near his home until he was sixteen years old, and then spent one year

at Luther College in Decorah, Iowa, and the next year in Carleton College at Northfield, Minnesota. He taught school for two years in northern Minnesota, and then entered the University of Minnesota in the fall of 1893. He was graduated as a physician in June of 1896, and in his graduating class were Dr. John A. Sorg (1869-1898) and Dr. William M. Edgerton (1870-1939), both of whom have figured in the history of medicine in Dodge County. Doctor Mayland was licensed to practice medicine in Minnesota on June 9, 1896, receiving License No. 692.[40]

During the summer of 1896 Doctor Mayland assumed the practice of his brother, Dr. Martin L. Mayland (1868-1937), at Faribault, and for a while in the fall of that year he was associated with Dr. Joseph A. Gates (1870-1922) of Kenyon, who was an old friend of his. At this time Dr. Eric O. Giere (1868-1942) was preparing to leave Hayfield in Dodge County. He communicated with Doctor Mayland and asked him to take his place at Hayfield. By December of 1896, as mentioned earlier herein, Doctor Mayland was well established at Hayfield, where he was elected mayor and where he became local surgeon for the Chicago and Great Western Railway Company.[160] On May 12, 1897, Doctor Mayland was married to Miss Ranveig S. Bugge (1874-1942), a native of Wanamingo, Minnesota. In the summer of 1899 he moved to Red Wing in Goodhue County, and in the spring of 1902 he became surgeon to a logging company at Bagley in Clearwater County, Minnesota.

In about 1908 Doctor Mayland removed to Montana, where he was licensed to practice medicine on October 15, 1911.[320] In 1913 he settled in Great Falls in that state, where he is at the present writing (1943).

Dr. Elmer Ellsworth Harrison (1866-1934) was born in Freeborn County, Minnesota, on March 20, 1866, the son of John Harrison and Mary Pierce Harrison.[373] He was one of three sons and three daughters. His father was a farmer, a native of Liverpool, England, and his mother was born in Cattaraugus County, New York. The young man's early years were hard. He had to earn the money which would enable him to attend the New Richland High School, and this he did by working as a farm hand.[373] When he had been graduated from the New Richland High School he attended the Mankato State Teachers' College, from which he was graduated in 1892. He became superintendent of a school at Paynesville, in Stearns County, and there he managed to accumulate some money with which he could begin, at least, his medical education. On August 7, 1893, at Alma City, Minnesota, he was married to Miss Myrtle E. Davidson, a native of Waseca County.[373] He entered the University of Minnesota College of Medicine and Surgery in 1894, and during the summers supported himself and his family by selling hail and cyclone insurance in Freeborn and Waseca Counties.[373] Doctor Harrison was graduated from the University of Minnesota College of Medicine and Surgery in June of 1897, and on August 1 settled at once in West Concord, where he remained for the rest of his life. He was licensed to practice medicine in Minnesota on June 10, 1897, receiving License No. 799,[40] and he was elected to membership in the Minnesota State Medical Society on June 16, 1898, at the thirtieth annual session of that organization in Saint Paul.[374] Dr. Parks Ritchie (1845-1913), dean of the University of Minnesota College of Medicine and Surgery, and Dr. John T. Rogers (1867-1937) of Saint Paul, were the physicians who endorsed his application for membership and sponsored him.[374]

For many years Doctor Harrison maintained a team of horses for driving

to answer his professional calls, and his widow[373] said that the mud roads of Dodge County often were in such bad condition that fences were pulled down so that horses and carriages could be driven across the fields. Even after Doctor Harrison acquired his first automobile in 1910, he still found it necessary to keep a team of horses, since in bad weather he could not use his automobile in certain parts of the county.

Doctor Harrison remained in West Concord until shortly before his death. He was health officer of the village for thirty years, and of Dodge County for a number of years. He was a member of the board of trustees of the West Concord Baptist Church. He served on the village board of education for twenty-five years, and was a president and a secretary of the Dodge County Medical Society. He was a member of the Minnesota State Medical Association and the American Medical Association. During his leisure hours he liked to raise flowers and to devote himself to music. In his earlier years he had been an accomplished cornetist.

Failing health forced Doctor Harrison to relinquish his practice at West Concord in November of 1933. At that time he moved to Worthington, where his son, Dr. Percy W. Harrison (1899-), is associated with the Worthington Clinic. Doctor Harrison died at Worthington of carcinoma of the prostate gland, on June 11, 1934,[375] and was buried in Concord Cemetery on June 13 of that year.

Dr. William Henry Tefft (1873-1938) was born in Belmont, New York, in 1873. He was the son of Thomas S. Tefft, a deputy clerk in that town.[376] He was graduated from the University of Michigan Department of Medicine and Surgery (as it was then called) in 1898, and was licensed to practice medicine in Minnesota on October 11, 1898, by Certificate No. 962.[40] He came to Dodge Center in Dodge County in July of 1898, as previously mentioned, and he remained there until the spring of 1899, when he removed to Claremont. In December of 1899 he returned to his home in Belmont, New York,[169] and not long thereafter was accepted as an officer in the Medical Corps of the United States Army.[376] He was ordered to the Philippine Islands, but by 1904 he was stationed at Fort Snelling.[377]

Doctor Tefft served in nearly every possession of the United States, but his career was signalized by his brilliant record as commander of an evacuation hospital during the great Marne offensive in the first World War. For this outstanding work he was awarded the Distinguished Service Medal in 1919 by the War Department in General Order No. 103.[378] The official citation accompanying the medal follows:

> As commanding officer of Evacuation Hospital No. 7 at Chateau Montomglaust, he performed his exacting duties with unflagging energy and marked executive ability. Overcoming grave difficulties due to inadequate personnel and equipment, he succeeded in receiving, treating, and evacuating a large number of wounded from the Marne offensive with notable success, thereby rendering services of the utmost value to the American Expeditionary Forces.

Doctor Tefft retired from the service as a colonel on March 1, 1937. He died of carcinoma of the pancreas at Fort Sam Houston, Texas, on July 1, 1938.[379]

Dr. Mary Eliza Ranson (Mrs. A. Franklin Strickler) was born at Dodge Center, Minnesota, on May 25, 1873,[380] the daughter of Dr. Stephen William Ranson (1843-1904) and Mary Elizabeth Foster Ranson.[233] She attended

the Dodge Center High School, from which she was graduated in June, 1890. She then enrolled in Hamline University in Saint Paul, and was graduated in 1894 with the degree of Bachelor of Philosophy.[380] In 1894 and 1895 she taught in the high school at Marshall, Minnesota, and in the public schools of Saint Paul. In 1898 she received the degree of Doctor of Medicine from the University of Minnesota College of Medicine and Surgery,[380] and on June 16, 1898, she was licensed to practice medicine in Minnesota under Certificate No. 935.[40] She spent eight months in Dodge Center in practice with her father,[380] and in February of 1899 removed to Saint Peter to become junior physician in the state hospital situated there.[166] In September of 1900, at Dodge Center, she was married to Dr. Abraham Franklin Strickler[381] (1873-1927), a brother of the well-known New Ulm physician who was the first of his profession to become a regent of the University of Minnesota,[382,383] Dr. Ora C. Strickler (1863-1928). Dr. A. F. Strickler at the time was also a member of the medical staff of the hospital at Saint Peter. Doctor Ranson and her husband immediately went abroad to visit continental clinics and to study European medicine and practice, especially in Germany and at Vienna.[380] Returning to the United States in January of 1901, they settled in Sleepy Eye in Brown County, where they practiced medicine together until the death of Doctor Strickler in Saint Mary's Hospital in Minneapolis on September 12, 1927.[384]

Doctor Ranson was a general practitioner for most of her career, but preferred obstetric practice to other specialties in medicine. In 1930 she visited England, Scotland, the Scandinavian countries, Russia, Switzerland, Italy, France, Palestine and Egypt, and has reported[380] that her avocation still is traveling in her automobile. She has been a member of the Dodge County Medical Society, Brown County Medical Society, Minnesota State Medical Association, and the American Medical Association.[380] At the time of this report (1943) she was dividing her time between Long Beach, California, and Sleepy Eye, Minnesota.

(To be concluded in the April issue.)

References will appear at the conclusion of this article.

President's Letter

MEDICAL INSURANCE

The day is undoubtedly coming in Minnesota, as in the rest of the country, when the ordinary citizen will reckon insurance against costs of medical and hospital service as part of his fixed expense just as he now reckons insurance against fire, theft, storm, damage to his car and loss of his life.

The principle of insurance as applied to medical service has now been accepted officially by organized medicine. It is a familiar concept to every man who desires to protect himself and his family against all foreseeable hazards. It is essentially American and self-reliant and may be looked for with certainty after the war, provided the government does not step in, in the name of Social Security, and remove all personal responsibility from its citizens.

We are perhaps in a fortunate position in Minnesota because we have not been forced prematurely into experimenting with this new phase of insurance protection. Experiments are now going on under medical society sponsorship in a considerable number of industrial states and communities. The demand came there, early, and the physicians had no choice but to chart their way in the dark, so to speak. We shall benefit by their experience, I hope, and so avoid costly errors that some of them made in the early days of their formation.

Reports from the second annual conference of executives of these medical society plans, held in Chicago last month, showed that many are now approaching the solid ground of solvency and satisfactory service. Our Committee on Sickness Insurance is keenly interested in developments. Its chairman attends the conference and receives its reports. A wide background of information is thus being collected which should be of great assistance to us in Minnesota.

At the same time, no national, master plan has been developed and it is probable that no one plan can ever be developed that will meet all of the varying conditions among the states and communities within the states.

Let us not, therefore, sit back complacently and wait for some superplan to drop full blown into our laps in Minnesota.

This is a sound development along traditional lines. It is needed here, as elsewhere, and we, too, should step out boldly, as soon as wartime conditions permit, to lead the way toward a plan in Minnesota.

E. Mendelsohn Jones

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

RELOCATION OF PHYSICIANS

WHILE one cannot speak with assurance of the how and when of demobilization of medical officers from the armed forces, it may be assumed that it will be a more or less gradual process. The sick and wounded servicemen will have to be cared for until ready to be discharged from active service or transferred to United States veterans' hospitals.

It is safe to assume that the majority of medical men in service, upon discharge, will return to their former locations. Some, however, will doubtless take advantage of the occasion to seek other locations. Many of the younger men who entered the service from medical schools or internships will seek postgraduate training in the specialties, and the capacity of institutions devoted to postgraduate medical training will be taxed.

There may be a dearth of discharged physicians seeking the smaller centers of population. In an effort to make location of these smaller centers more attractive and to help meet the financial outlay always entailed in changing location, Congress has made an appropriation of $200,000 for the rest of the fiscal year ending June 30, 1944.

According to the provisions of the act, a municipality, county, or other local subdivision of government may submit to the Surgeon General an application for the relocation of a physician or dentist, provided the application has first been approved by the State Health Department having jurisdiction. The Surgeon General may then enter into an agreement with the physician or dentist under which he will be allowed $250 a month for a period of three months, and the actual cost of travel and transportation of the physician or dentist and his family and household goods, the municipality agreeing to contribute 25 per cent of the total cost. The physician or dentist must have a license to practice in such community and must agree to practice in the locality for a year.

While the end of the war is not in sight, medical men are being discharged from the services about as fast as enlistments are taking place. The smaller centers of population and the local physicians are feeling the lack of private physicians more than the larger cities and urban physicians. Congress has at least provided a mechanism whereby localities can present their need; the success of the plan remains to be seen.

HIGH GOVERNMENTAL FINANCE

"We might pause here to ask what has become of all the billions of dollars that have been collected in this era of the social planners to meet the obligations of the Government in the matters of retirement, old-age pensions, and unemployment benefits that are provided for in the present law. The fact is, this money, collected from employes and their employers alike, has been used to pay the current expenses of this extravagant regime. When the time comes to meet the purposes for which it was collected, the people will again be taxed to supply it."

THE above quotation is taken from a speech made on December 7, 1943, by the Honorable A. L. Miller, a physician and congressman from Nebraska, before the House of Representatives. It is no secret that these funds raised by taxation of employes and employers for the specific purpose of providing old-age pensions and unemployment compensation have not been set aside for these purposes but instead have been spent for other purposes. If an employer in private industry or a life insurance company accepted payments to cover a specific liability and spent the funds for other purposes, what would be the reaction of the public and the Government? This procedure cannot be excused on the grounds of war expediency, for it has been going on since the Social Security Act became law. With its ever-increasing spending, the New Deal with its new philosophy of the function of the Federal government, ran our national debt up to forty-five billions before Pearl Harbor. Does anyone think for a moment that even had there been no war, the Government would have been able to meet its Social Security obligations without additional taxation?

The funds which will be collected under the Wagner-Murray Bill will amount to billions of dollars, estimated by some at fifteen to twenty, depending on the state of private industry in the postwar years. Since three and a half billions will

be allocated to medical care, one may be excused for wondering whether the income from this source will actually be spent for medical care or will be added to the general fund and will be spent for other purposes should the bill be passed.

AMA SESSION, 1944

THE annual session of the American Medical Association in 1944 will be held in Chicago, June 12 to 16. The plan to hold the meeting in Saint Louis this year had to be changed because of lack of hotel accommodations in that city.

The House of Delegates will meet in the Palmer House and the Scientific Exhibit will be located in the same hotel. The Technical Exhibit, however, will be held in the Stevens Hotel.

As hotel accommodations are often difficult to obtain, even in Chicago, those who plan to attend should make reservations early.

THE NATIONAL PHYSICIANS' COMMITTEE

THOSE who have supported the activities of the National Physicians' Committee in the past doubtless will be interested in the recent activities of this organization.

In the first place, there may have been some doubt in the minds of some as to the relationship of N.P.C. to other medical organizations. While N.P.C. is in no way officially connected with any other medical organization, its objectives have received the endorsement of the House of Delegates of the American Medical Association and, more recently, of the new Council on Medical Service and Public Relations. It has been in a position to accomplish certain objectives which the American Medical Association, owing to the nature of its constitution and organization, has been unable to do. The National Physicians' Committee has accomplished a great deal in the several years of its existence and, during the past year, it has been more successful in accomplishing its objectives than in any previous year.

The National Physicians' Committee, under the guidance of its Administrator, Mr. John M. Pratt, has carried on a campaign of propaganda against the Wagner-Murray-Dingell Bill during the past year which has been singularly successful. It has aroused the attention of laymen throughout the country and has drawn fire from such radical publications as PM and other sources. As a result of distributing some twelve million pamphlets detailing the various objections to the Wagner Bill and the great harm it would cause to medicine and to public health, there has been widespread expression throughout the country by laymen voicing objection to the bill. In addition, physicians and other professional men were urged to address service clubs and other gatherings, outlining the dangers of this bill. Approximately 160 newspapers have carried full-page announcements calling attention to the dangers of the bill. Thousands of letters and telegrams have been written by laymen to members of Congress, voicing their objections. As a result, voluntary expressions have been made by a large number of senators and congressmen who registered their disapproval of the bill. Largely as a result of this campaign, the chances for passage of the Wagner-Murray-Dingell Bill are now considered very doubtful. This campaign of publicity is generally acknowledged to be one of the most effective campaigns for the dissemination of information ever conducted.

During the last six months the National Physicians' Committee has engaged the Opinion Research Institute, which is a subsidiary of the Gallup Poll, to conduct a survey of public opinion regarding various phases of medical care. The preliminary results were so astounding that a further survey was made, which covered every section of the country thoroughly, so that there was no doubt as to the accuracy of the results. The results of this survey have been, in many instances, quite contrary to opinions which have been expressed previously, particularly by certain agencies in Washington. Contrary to statements emanating from that source, the great majority of laymen are not in favor of federal control of medicine or of compulsory sickness insurance. Surprisingly enough, this includes the laboring class, who apparently do not agree with their leaders. The great majority of citizens are satisfied with most of the features of the present form of medical care. There is, however, concern on the part of a great many as to their ability to meet the cost of catastrophic illness. The desire for some form of insurance, voluntary and not compulsory, and at a figure they could economically support, was expressed by a large section of those interviewed.

It is also of interest that the American Medical Association was not regarded as a medical trust,

(Continued on Page 215)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

AMA COUNCIL VOTES WASHINGTON OFFICE

When the National Conference on Medical Service adjourned in Chicago last month, it was a foregone conclusion that an Office of Information for medicine would be opened in Washington at an early date.

That the office would be a part of the American Medical Association and under direction of the Council on Medical Service and Public Relations, was also a virtual certainty, though final approval still awaited action by the Board of Trustees.

Back of this certainty and the events of that crowded session, lay a situation that is probably without precedent in the history of organized medicine in the United States. For that reason, it might be well to review the sequence of events since last year's conference when the proposal to establish a national office in Washington first received nationwide attention among representatives of state medical associations. The idea originated in our own North Central Conference on Medical Service last year and was duly forwarded to the Board of Trustees. The Board marked time on the matter until the House of Delegates of the American Medical Association should meet.

By the time the delegates met in June, the national conference resolution had received wide publicity among the associations. Many state associations had officially endorsed it. Many others had passed similar resolutions and among the delegates there was a demand for better public policies and better public relations, so resolute that it could not be ignored.

Mandate Not Clear

The proposal to establish a Washington office met with opposition from the more conservative element, however, and the upshot was that a new Council on Medical Service and Public Relations was formed. Most of the delegates went home satisfied that one of the functions of this council would be the early creation of the Washington office; but the mandate was not clear and those who opposed its establishment seized upon one equivocal vote as justification for continuing an obstructive policy so far as the Washington headquarters was concerned.

It was announced in the *Journal of the American Medical Association* that the House of Delegates had voted to reject the office and the surprise and indignation expressed editorially by many medical journals, including MINNESOTA MEDICINE, should have been recognized as a forewarning of what was to come.

The Council on Medical Service and Public Relations was duly formed as soon as the delegates adjourned and very promptly encountered the usual wartime difficulties in perfecting its organization and in finding a qualified secretary. Pending completion of its organization, the Council also marked time. It issued a mild and general statement of policies but made no apparent move toward establishing a direct connection between Congress and government agencies in Washington and the medical profession. For several months they were unable to find a well-qualified secretary; but state associations and county societies all over the country were becoming impatient. Many of them openly denounced what they regarded as weakness and inaction on the part of the Council.

Western League Formed

Then the storm broke. Eleven western states were summoned by one of them to a conference and nearly all of the eleven joined in the creation of the "Western Public Health League" through which they proposed to establish their own office

in Washington. They raised their own funds, selected their own bureau head and invited other states to join them.

At approximately the same time, a group of physicians from Lake County, Indiana, formed what they called the "Association of American Physicians and Surgeons." They proposed to do the same thing and promptly sent a newspaper broadside to every doctor in the country telling about their plans. They, too, asked other states to join and send them contributions. Many did.

Division Threatened

Other states and groups of states met and drew up expressions of policies or openly demanded an office in Washington. The situation was dangerous in the extreme. The demand for a new spirit in medical leadership and more forthright action clearly showed that medical men everywhere were awake at last to the peril of their own position. It showed clearly, also, that the councils of medicine, far from being hidebound and controlled, might soon be completely disrupted and that division and lack of harmony might render all effort impotent.

At this point the North Central Conference met in Saint Paul and passed the resolution which appeared in these columns last month, expressing its confidence in the Council on Medical Service and Public Relations, its disapproval of disunity and its hope that an office would soon be established under Council auspices in Washington.

In an atmosphere of tense interest, the entire situation was thrashed out in this year's meeting of the National Conference in Chicago. Representatives of the Western Public Health League and of the Lake County, Indiana, organization laid their plans on the table and frankly expressed their disappointment in the absence of action by the Council. The Council, through its chairman, Dr. L. H. Bauer of New York, explained its difficulties, reaffirmed its purposes. Representatives of those who have consistently opposed establishment of a Washington office were present and participated in the discussion; but it was obvious to everybody that they had waged a losing fight. A forthright and masterly plea for responsible, working representation in Washington by Minnesota's Congressman, Walter H. Judd, appeared to clinch the matter.

Tentative Date Set

Long before the resolutions were brought in calling for such action on the part of the Council, in preference to separate action on the part of sectional groups, the outcome was evident. There remained the meeting of the Council, itself, called immediately after the Conference adjourned. It was expected that the Council would propose immediate establishment of an office in Washington and it did so. Representatives of the Western League, which had already declared itself as ready to open its own office on March 15, appeared before the Council and readily agreed to give way, provided the Council acted promptly and effectively. The Council accepted the responsibility and set a tentative date in April. The Indiana organization gave way without argument and there remained, at the end of an eventful day, only the final approval of the Board of Trustees to be secured. That the Board's approval will be forthcoming shortly is confidently expected by all concerned.

Long Step Forward

It is generally agreed, especially in Minnesota, where the movement started, that an office of information for medicine in Washington will be a long step forward in the creation of good public relations for medicine. The method has proved itself in Minnesota and many other states.

It is not, of course, the complete answer to the preservation of freedom for the physician, as the cornerstone of medical progress. There must also be wisdom, foresight and devotion on the part of the occupants of the Washington office and they must be equipped with a public policy which takes account of the needs of all of the people and of the inevitable demand that those needs shall be met—if not under the leadership of medicine, then by some other method which may, at the same time, destroy the basis of good medical practice.

The responsibility which the Council will assume in Washington is heavy. But the odds are with it and the stakes are higher, even, than the future of medical practice. They are intimately bound up with the continued freedom of the individual and of individual enterprise in the United States.

EXPERT TESTIMONY FROM CONGRESSMAN JUDD

It may well be that the talk made by Congressman Walter H. Judd of the Fifth Minnesota District before the National Conference on Medical Service in Chicago really turned the tide toward a new and more realistic handling of medical affairs in Washington.

At any rate, here, at a critical moment, was expert testimony from a congressman who is also a physician and who, therefore, saw the situation from both sides of the Washington fence. Here was testimony, also, from a man who is known to be actuated by the highest motives both as a congressman and as a physician and a man who is wholly convinced that the freedom of physician and patient in America must be preserved.

A brief digest of Dr. Judd's remarks is printed below.

The Doctor's Problem

The doctor's problem, like the businessman's problem has changed, Dr. Judd said. Once, the businessman's problem was chiefly financial. Then it became a matter of production and distribution. Then it was labor. And now, as government reaches farther and farther into the life of every citizen, it is government, itself, and business must of necessity have somebody constantly in Washington to work with government and government agencies.

So, in medicine, the physician's problem once was curative medicine. Then it was prevention of disease. Next it became a problem of devising and employing new techniques for distribution of medical service. Now it is also government, and the problem of handling Congress and the government bureaus must be tackled by the doctor as well as the businessman.

As doctors, we are trustees of a magnificent heritage. But we are now in a great national crisis and great crises tend to show up both our strength and our weaknesses.

We Never Stood Higher

It is my belief that medicine never stood higher than it does today, so far as scientific achievement is concerned. It never stood higher so far as patriotism goes. The readiness of so many of its practitioners to go into the hardest kind of military duty without any compulsion whatever except the desire to serve has surprised Washington. But the national crisis has brought home to many the fact that medical services at home are inadequate in quantity and their distribution imperfect.

When there are inadequacies in any essential goods or services, rationing is necessary. Without it you may have a situation in which the best and most medical services go to the highest bidder and that is a thing which we must avoid.

We must find a way to extend good medical service to everybody, not only because medical service is an essential, but also because a way to do it will certaintly be found by somebody, if not the physician, and that way may not be to our liking.

They Do Not Comprehend

There are people now who have a program designed for that purpose. They acknowledge that 80 per cent of our people have good medical care, better care than any people anywhere in the world. It is a fact, however, that we doctors tend to emphasize the excellence of the care given to the 80 per cent and forget all about the other 15 to 20 per cent; while these other people emphasize the troubles of the 15 per cent and are perfectly willing to scrap the whole system which now takes excellent care of the great majority for the sake of the unfortunate 15 per cent. Mostly, I believe, these people are sincere. They simply do not comprehend what are the basic essentials of good medical service. But they do have access to the agencies that supply information to the country and to the machinery that gets legislation on the statute books.

Must Come from Within

We doctors know that three basic principles must be maintained and perpetuated if medical service is to continue on a high standard in the United States. First, the service must be voluntary. Second, it must be personal and direct between doctor and patient. Third, there must be a constant stimulus to advancement. It is up to us, therefore, to find a solution to problems of quantity and distribution from within which will preserve those principles. If we do not, the solution will be found from without and quality will suffer.

Obviously we must work out our own plans, and, equally obviously, we must sell them to Washington. To do that we must have, first, a better liaison with Washington.

We Cannot Wait

We all agree that it would be a good thing to have a Department of Health in the cabinet. But the way to such a re-organization is long and difficult and we cannot wait for it. What we need now is a two-way information bureau. Not a bureau which distributes information according to your prejudices; but a source of factual, unprejudiced information which will originate in Washington, itself, and which will be available at all times to members of Congress.

It is true that there are seven doctors in Congress, but these seven doctors cannot do the job for you. They lack the time to ride herd on legislation and anyway they were not sent to Washington to represent medicine alone, but all the people in their constituencies. If they were to attempt to assume the responsibility for the medical profession they would soon be known as "plants" and their usefulness would be destroyed.

The cultists and the quacks have lobbies in Washing-

ton and they are constantly on hand. They slip a word into legislation here, a qualification there, and there is no one to tell the uninformed legislator that these qualifications are injurious to the public welfare.

They Welcome Help

Legislators are human. They welcome help. In fact they often seek it in the interest of public welfare. They would seek it from qualified representatives of medicine if they were there to give it to them when it is needed. There is no lack of dignity, no prostitution of professional standards involved in establishing a bureau openly to give them help.

It is not likely that the Wagner-Murray-Dingell Bill will pass this year. But do not take too much comfort from that. That means that you have a breathing spell now. But it is your last breathing spell. If you do not come through with constructive proposals and constructive help for Congress at once, you will be too late.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. DuBois, M.D., Secretary

Minneapolis Woman Placed on Probation Following Plea of Guilty to Charge of Criminal Abortion

State of Minnesota vs. Alma Peterson (Anna Peterson)

On February 21, 1944, Mrs. Alma Peterson, who is also known as Mrs. Anna Peterson, 3526 Knox Avenue North, Minneapolis, was sentenced to a term of not to exceed five years in the Women's Reformatory at Shakopee, Minnesota, the sentence being suspended and the defendant placed on probation for a period of three years. The defendant had entered a plea of guilty on February 7, 1944, to an information charging her with the crime of abortion. The defendant also admitted a previous conviction to a similar offense in December, 1934. Judge Arthur W. Selover, who imposed sentence, stated that the Court was taking into consideration the fact that the defendant was engaged in war work, operating a power machine in the manufacture of army overcoats for D. B. Rosenblatt, Inc., 119 4th Street North, Minneapolis. Judge Selover stated that it was unusual to grant a suspended sentence to a defendant with a previous criminal conviction, but, under the circumstances, would give the defendant another opportunity to make good.

The defendant, fifty-four years of age, married and the mother of three grown children, admitted that she was paid $20.00 for the abortion which was performed with a catheter. The patient became seriously ill and was taken to a Minneapolis Hospital where she recovered. The defendant admitted performing five criminal abortions during 1943, for which she received $20.00 from each case for her services. Upon being questioned by the Court Mrs. Peterson stated that prior to 1926, she lived at Mora, Minnesota, and that she had only a sixth grade education. When asked how she learned to perform abortions she stated that she had aborted herself on seven occasions, getting her advice in the first instance from a doctor.

EDITORIAL

(Continued from Page 211)

as has been ballyhooed from Washington, but that its objectives met with the approval of the great majority of laymen who are acquainted with it.

This information, together with much more, will be given to the press at a conference to be held in New York in the very near future. In addition to these various activities, the National Physicians' Committee is still sending editorials acquainting the layman with the accomplishments of medicine to 12,000 weekly newspapers throughout the country.

From all this it is evident that those of you who have given support to N.P.C. activities in the past have had liberal returns from the investment. It is also evident that in order to carry on this program, continued funds must be forthcoming from the medical profession. It will be necessary for those who have given in the past to be even more generous in the future and those physicians who have not made any contributions should do so at their earliest conveniece.

W. F. Braasch
F. J. Savage

CORRECTION

In the editorial entitled "Maternity Assistance for Soldiers' Wives," which appeared in our January issue, it was stated that "Mississippi and Texas, if they have not already done so, will doubtless shortly be added" to the list of states in which the Maternity Plan is operating. The statement should have read "Louisiana and Texas," for Mississippi heads the list of southern states in the number of cases accommodated by the Emergency Maternal and Infant Care Program. Incidentally, Louisiana and Texas began operation in December, according to a communication received by the Director of the Maternal and Child Health of the State of Mississippi.

GERM-KILLING SUBSTANCES FOUND IN ONION OILS

Apparent support for an old folk-belief that onions, garlic and their strong-scented kin-vegetables are "good for what ails you" is offered by the reported discovery, by Prof. B. P. Tokin of the University of Tomsk, USSR, that their essential oils contain substances that kill bacteria, protozoa and even larger organisms like yeast cells and the eggs of certain lower animals. The report is contained in a bulletin of the USSR Society for Cultural Relations with Foreign Countries, which has just been received in the United States.

Professor Tokin has given the name "phytoneides" to the substances he has isolated. Experimental use in hospitals is now being made of these compounds, particularly in the treatment of suppurative wounds.—*Science News Letter,* February 12, 1944.

Minnesota Academy of Medicine

Meeting of December 8, 1943

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minneapolis Club on Wednesday evening, December 8, 1943. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the President, Dr. H. B. Zimmermann.

There were forty-six members and two guests present.

Minutes of the November meeting were read and approved.

The Secretary read a letter from Dr. John M. Armstrong requesting that his name be placed on the Senior list of members. A motion was seconded and carried that this be done.

The annual election of officers was held and the following were elected for the year 1944:

President.....Dr. Walter Camp, Minneapolis
Vice President..Dr. A. G. Schulze, Saint Paul
Secretary-Treasurer.....Dr. Erling Hansen, Minneapolis

The scientific program followed.

INTRATHORACIC TUMORS

THOMAS J. KINSELLA, M.D.
Minneapolis, Minnesota

Dr. Kinsella read his Inaugural Thesis on "Intrathoracic Tumors." Lantern slides of x-ray films and color slides of pathological specimens were shown.

Abstract

I deeply appreciate the honor of my position here as a member elect and the privilege of presenting this material as my Inaugural Thesis.

Thoracic tumors may be discussed in three groups—those involving the chest wall, the mediastinum and the lung. I have purposely omitted any consideration of the most common tumor of all—bronchogenic carcinoma except as it presents itself as a gross tumor mass, because the obstructive phases of this subject have been so ably covered by Dr. Rigler at a recent meeting. Contrary to common opinion, the majority of thoracic tumors aside from primary cancer of the lung, are benign rather than malignant, and many are amenable to surgical treatment. The earlier they are excised, the simpler the task and the less the risk. As the diagnosis is not always certain, exploratory thoracotomy is frequently advisable.

(Note: The complete presentation will be published at a later date.)

Discussion

Dr. Leo G. Rigler, University of Minnesota: I think the Academy is to be congratulated on acquiring a thoracic surgeon of Doctor Kinsella's calibre and great accomplishments. I am always fascinated, when listening to the achievements of a good thoracic surgeon, especially when I contemplate the change which has occurred in this particular field of surgery in the past decade. We have had, I think, the opportunity of seeing one of the most beautiful demonstrations of the possibilities of thoracic surgery that it has ever been my own pleasure to witness.

It is interesting to find that a good many of these thoracic tumors are discovered rather accidentally. At the University Hospital, for example, where we do a routine fluoroscopic examination on all the patients admitted to the Hospital and out-patient clinic, we have discovered a rather considerable number of such cases which have hitherto been undetected both by the patient and his physician. As a result, this procedure has brought a good deal of work to the thoracic surgery service.

I should like to emphasize the fact that the differentiation of aneurysm of the aorta from other intrathoracic tumors is not at all easy. There are many instances in which an aneurysm may be simulated, particularly by a substernal thyroid and vice versa. I think the differentiation can best be made by careful fluoroscopy in a variety of positions, and occasionally roentgen kymography is also helpful; but, even so, difficulties may be encountered.

I think Doctor Kinsella wisely stressed the wide variety of roentgenographic examinations which must be made to help in the differential diagnosis of thes thoracic tumors.

I should like also to emphasize one other point: that is, carcinoma of the lung rarely produces rib destruction. I have recently seen one such case, but such exceptions simply tend to emphasize the rule. With the exception of the pulmonary sulcus tumor of Pancoast, as Doctor Kinsella has already pointed out, the primary lung tumors rarely erode ribs.

Endothelioma of the pleura is another tumor which should not be overlooked. While there is some doubt that this is a pathologic entity, we have seen several cases found among our students during the course of routine examination which eventually proved to be very malignant.

I think Doctor Kinsella has wisely emphasized the teamwork between the radiologist, the clinician, and the thoracic surgeon which is necessary in the case of thoracic lesions, both in the determination of the diagnosis and in the exploration of the possibilities of curative surgery.

Dr. H. L. Ulrich, Minneapolis: I would like to ask Dr. Kinsella how often he has encountered what is commonly called pulmonary osteoarthropathy in these cases of intrathoracic tumors. Recently there has been reported four cases of intrathoracic tumors with these changes, and associated changes in the pituitary gland.

Dr. Wm. A. Hanson, Minneapolis: I wish to compliment Dr. Kinsella on the presentations of his cases. Dr. Leo Rigler or Dr. Kinsella, in their reviews in their theses, did not mention broncholithiasis, which I believe is of importance. The excellent photographs and slides I believe were taken by Dr. Kinsella himself, which have added materially to his discussion.

Dr. Kinsella, in closing: Finger changes, i.e., clubbing and watch crystal nails, are not common but do occur in perhaps 4 to 5 per cent of patients with primary bronchogenic carcinoma. Probably one of the reasons for this is the fact that the patient with this disease may not live long enough to develop them. The patient whose films showed the two large tumor masses had definite clubbing of the fingers and toes.

Exploratory thoracotomy certainly has a place but may be of greater theoretical than practical value, particularly in the adenoma group for frozen sections here may prove more confusing than helpful even with an experienced pathologist at hand. We must depend to a considerable extent upon the gross local findings and our previous studies in deciding upon the procedure to carry out once the chest has been opened.

The broncholiths which we see are small and are not easily confused with bronchial tumors. Occasionally, a larger focus or tuberculoma undergoes calcification but the size and location and density should serve to identify this condition.

The diagnosis and treatment of thoracic tumors requires the closest coöperation between the internist, the roentgenologist, the bronchoscopist, the pathologist and the surgeon. Exploratory thoracotomy is no longer the dangerous procedure that it was several years ago, thanks to the services of the expert physician anesthetist, without whose services most of this work would not be possible.

The meeting adjourned.

A. J. Schulze, M.D.,
Acting Secretary

Meeting of January 12, 1944

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minnesota Club, Saint Paul, on Wednesday evening, January 12, 1944. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the President, Dr. Walter E. Camp.

There were forty-five members and six guests present.

Minutes of the December meeting were read and approved.

There was no new or old business to come before the Academy and the scientific program followed.

Dr. Zimmermann, of Saint Paul, retiring President, made the following remarks and read his Presidential Address.

I want to thank the Academy for having me as President this past year, and to assure you I appreciate and have enjoyed it a great deal. The business of selecting a President's address is certainly a difficult one. My reason for selecting the Wagner Bill and the attitude of organized medicine and doctors toward this bill was because I thought it was something of extreme moment to all of us today. It has interested me a lot. It seems to me there is a way out of the worst part of the dilemma.

ORGANIZED MEDICINE AND THE WAGNER-MURRAY BILL

HARRY B. ZIMMERMANN, M.D.
Saint Paul, Minnesota

I have read quite thoroughly Bill S. 1161, known as the Wagner-Murray Bill, and I have found it rather unpleasant reading, and I am convinced that should it become law I would have a very unhappy time. I at one time intended to epitomize the entire Bill, and point out to you its dangers, but this would take much too long. Suffice it to say that, as far as medicine is concerned, it covers two broad functions.

One concerns the distribution and financing of medical care. This, I contend, is society's business, or at least it will make it its business.

The other function is the standardization of doctors and hospitals and the supervision of professional education and medical research. These are very definitely the doctors' business, and should this sort of dictatorship become the law of the land it could decidedly lower the standards of medicine.

The arguments for or against Socialized Medicine are without end. Debates on the subject could continue indefinitely. This paper is not to defend or accuse Socialism. I am assuming that the people of this country want some change in the method for providing medical care. When people demand a change they usually get it.

Throughout the ages Medicine has made progress. This progress has been made by the doctors themselves, through their Guilds, and societies, and schools. No matter what type of economic or social scheme is adopted, medicine as a Science and Art is our responsibility, and we should exert every effort to keep it so. It may be that we have voluntarily relinquished some of our functions in order to more efficiently perform others; one of these is the social function.

Many of our arguments against any form of Socialized Medicine are confessions of our own inadequacy. One argument, which we use constantly, is that any scheme of government regulation of our profession will be dominated by social workers. Apparently a fair majority of the medical profession has a certain contempt for social workers; there was a time when the doctors were the only social workers, and they were extremely competent in this field. Long before the pronouncements of the Atlantic Charter doctors recognized that Freedom From Fear was a most necessary factor in the treatment of disease and they concerned themselves, actively, in alleviating, in every way, their patients' apprehensions. Because of the complexity of the modern social system and the tremendous development of medical science, we have found it expedient to delegate this very important work to laymen, untrained in medicine. I think it is time that we

include the Social Sciences somewhere in our curriculum.

Another one of our pet clichés that is beautifully sentimental, and as a tradition dates from Hypocrates, is what we like to call the "Doctor-Patient Relationship." There is no doubt that more or less of this relationship should be preserved, but we all know that in the care of the sick the doctor is responsible not only to the patient, but to social units of varying complexity, from the immediate family to economic units, and eventually to the entire community. It certainly makes a great deal of difference to the rest of the family if the patient gets poor medical care; it also is important to the patient's employer, his co-workers, and to the community which will have to take care of him should he be incapacitated as a breadwinner.

So, medical care *is* society's business.

There is no doubt that as medicine becomes more and more competent, society will be more and more interested in, and dependent upon, its accomplishments.

When medicine had little to offer it made very little difference whether or not the patient employed a doctor. He may have felt better if some weird individual, made up like a Mardi Gras character, danced about his tent and shook a rattle at him and gave him some nauseating draught, but society never quite accepted this sort of thing as very convincing.

But today the worst medical iconoclast cannot help but feel a certain sense of security for a son in the Service when he reads of the accomplishments of Military Medicine in the War.

A man going into the Service claims this kind of medicine as his right. The nation, as a military organization, finds it necessary in order to win the War. And, by the same reasoning, society will demand it when the War is over.

I believe we are inclined to feel that the financial responsibility for medical service is the concern only of us and our patients. Obviously this is not so. There are precious few patients who pay for their medical care themselves at the time of their illnesses. Medical care, in almost every instance, is being subsidized by the state, the government, or by private contributions. This, broadly speaking, is Socialism.

Another argument one hears is that government-regulated medicine will be dominated by politicians. This is perfectly obvious. Any type of Socialism is government by Bureaus or Committees. This to me is one of the grave dangers in the Wagner-Murray Bill and the place where I maintain we not only have the opportunity to do something, but where it is our duty to assert ourselves. Doctors could obviate this danger if they would use the present established means, which I will group under the broad term of Organized Medicine, to not only dominate, but actually be, these Committees.

The laymen feel, as do a great many doctors, that Organized Medicine is purely a Guild to protect the economic status of the doctor. In order to correct this entirely erroneous impression it will be necessary for everyone to have a better understanding of Organized Medicine, its functions and activities. If you look into it you will find that the least of the activities of Organized Medicine is concerned with the Guild function. When I speak of Organized Medicine I am referring not alone to the American Medical Association, although I feel it is by all odds the most important group, but I am referring to the various urban societies, county and state societies, organizations such as ours, and to the various learned groups and societies of specialists. Right now there is no activity of the government to which the specialized knowledge of doctors can contribute wherein these various groups are not called upon for advice.

If one looks over Bill S. 1161, one finds that the Surgeon General of the United States Public Health Service is to be the supreme authority and dictator of the entire practice and science of medicine, and that there will be appointed an Advisory Medical and Hospital Council, to consist of the Surgeon General as Chairman, and sixteen members to be appointed by him.

"These sixteen appointed members shall be selected from panels of names submitted by the professional and other agencies concerned with medical services and education and with the operation of hospitals and from among other persons, agencies, or organizations informed on the need for or provision of medical, hospital or related services and benefits."

I feel quite sure that the authors of this Bill intended that some members of this Advisory Council be chosen by the Surgeon General from panels submitted by Organized Medicine. Should this Bill ever come up for hearing we must see to it that none of the Advisory Councils or Advisory Boards that Organized Medicine has found necessary for the development and standardization of our professional activities are sacrificed. Instead they must be developed and given even greater authority.

I shall now read you section "b" from Page 43 of Bill S. 1161:

"(b) The Council is authorized to advise the Surgeon General with reference to carrying out the provisions of this Act, including (1) professional standards of quality to apply to general and special medical benefits; (2) designation of specialists; (3) methods and arrangements to stimulate and encourage the attainment of high standards through coördination of the services of general practitioners, specialists, laboratories, and other auxiliary services, and through the coördination of the services of practitioners with those of educational and research institutions, hospitals and health centers, and through other useful means; (4) standards to apply to participating hospitals and the establishment and maintenance of the list of participating hospitals; (5) adequate and suitable methods and arrangements of paying for medical and hospital services; (6) studies and surveys of the services furnished by practitioners and hospitals and of the quality and adequacy of such services; (7) grants-in-aid for professional education and research projects; (8) establishment of special advisory, technical, local or regional boards, committees, or commissions."

Because of the War the government is now enlisting all the scientific and technical talent available in the country to give advice on various problems directly connected with the War effort.

This is done through the National Research Council. The most expedient way of getting a start toward obtaining medical talent, as represented by the Division of Medical Sciences of the National Research Council, should be from committees suggested by the American Medical Association, and in turn by the various specialized groups throughout the country. These are Committees on: Medicine, Surgery, Neuropsychiatry, Aviation Medicine, Industrial Medicine, Sanitary Engineering, Shock and Transfusion, Treatment of Gas Casualties, Chemotherapeutic and Other Agents, Drugs and Medical Supplies. And Sub-Committees on: Nutrition, Surgical Infections, Burns, Injuries to Blood Vessels, Nerves and Bones, War Neuroses, Venereal Disease, Oxygen and Anoxia, Changes in Forces of Gravity, Decompression Sickness, Clothing, et cetera.

In the Emergency the Government has found it expedient to acquire all this talent through Organized Medicine, and the talent has done a good job.

As for the part of this Bill referring to grants-in-aid by the Government for medical research and graduate education: this I believe, is the most dangerous provision of the entire Bill.

The financing of research by Government grants would amount to peddling out funds purely on a geographic or per capita basis, as it would be impossible for any individual, or group of individuals, to evaluate the worthwhileness of research projects.

By the same token, to equally distribute funds for educational advantages to all doctors is idealistic and democratic but a perfectly stupid idea, and who, in a democratic country, would have the temerity to select those doctors who would be competent to take further education?

If society feels that medical research is being slowed up by lack of funds, I should be quite willing to have the Government build and equip research institutions, the workers to be selected by their faculties from the Medical Corps of the Army, the Navy, and the United States Public Health Service, and from deserving workers in civilian life. Allow these institutions to compete directly with our Universities and volunteer organizations, such as the Rockefeller Research Institute, thereby stimulating healthy competition among all of them.

As for grants-in-aid to practicing doctors for post-graduate work, society must see to it that doctors are sufficiently well paid to maintain a proper economic position and avail themselves of all the education that they feel is necessary, and for which they should be willing, and happy, to make certain small sacrifices.

After the War is over, and should laws be passed to regulate the practice of medicine, it is my thesis that as individuals we have every right in the world, in a democratic country, to support or oppose as violently as we wish, any tendency toward Socialized Medicine. But as doctors, and members of the medical profession, it will be our function to support Organized Medicine unanimously and wholeheartedly, on the assumption that Socialism is Government by Committees, commonly called Bureaus.

That being the case we should, through Organized Medicine, actually *be* the Committees or Bureaus, not because of any selfish interest as individuals, but because it is the only means by which we can maintain the high standards of medical practice, and therefore, give the best medical service to the people of this country.

We already have, in Organized Medicine, through the American Medical Association, facilities for doing all of this, in Councils on Medicine and Hospitals, Pharmacy and Chemistry, Physical Therapy, Foods and Nutrition, Industrial Health, and a Bureau of Information.

There are also Boards for the standardization of specialties and the selection of specialists; these are today performing their functions in an efficient and democratic manner. There are fifteen of these Boards of Medical Specialties, with from nine to thirteen members on each. We should see to it that all of these important Boards be represented directly or indirectly on any Government Bureau, and that decisions involving their functions be made by them before the questions be adopted as accepted procedure. (A complete list of these Committees is appended at end of this paper.)

There is nothing new about all this. There is plenty of precedent the world over, especially in England, for the recognition by the State of professional Guilds. For instance, the Royal College of Physicians and the Royal College of Surgeons, in England, are recognized by the State, and membership in them entitles one to practice, although they are purely medical Guilds, or Societies. By the same token, membership in the Inns of Court, by lawyers, entitles the individual to plead cases before Government Courts, although the Inns are lawyers' Guilds that originally were merely luncheon clubs.

It is my contention that inasmuch as we have, in Organized Medicine, all of the mechanisms necessary for the regulation of the practice of medicine, the standardization of medical practice in all of its specialties and the education of doctors, we should insist that these mechanisms, and these only, be used for the government of our profession, no matter how far society goes toward the distribution and making available of our services.

One of the chief difficulties that we will meet in achieving this end will come from insufficient unity among the doctors themselves. It will be necessary for doctors to so organize our existing societies and groups that they can claim the support and loyalty of all doctors. They should be democratic, to the extent that they will always represent medical opinion; they should be altruistic to the extent that their chief concern will always be the best possible medicine for society; and they should preserve enough of the Guild function so that practitioners of medicine will always enjoy their proper position in society and be sufficiently compensated to maintain that position.

Councils of the American Medical Association

Appointed by the Board of Trustees from among recognized specialists in the fields concerned, the Councils develop standards, pass upon methods and products, conduct investigations, report annually to the Board of Trustees and House of Delegates.

American Boards in the Specialties

Approved by the Council on Medical Education and Hospitals of the American Medical Association upon recommendation by the Advisory Board, the advisory Board on Medical Specialists is composed of two representatives each from each of the examining boards of the specialties and such other national organizations as are interested in education, examination or certification of medical specialists, including among the latter, the Association of American Medical Colleges, the National Board of Medical Examiners, the Federation of State Medical Boards of the U.S.A., the American Hospital Association, the Council on Medical Education and Hospitals of the American Medical Association.

The individual Boards and their membership are as follows:

American Board of Anæsthesiology.—Nine members representing the Section on Anesthesia of the American Medical Association (three); the American Society of Anesthetists, Inc. (three); and the New England Society of Anesthesiology (three). Coöperating organizations nominate their representatives on all Boards subject to the Advisory Board. They serve for six years.

American Board of Dermatology and Syphilology.—Nine members representing the American Dermatological Association (three), the Section on Dermatology and Syphilology (three). No term of office specified in the directory.

American Board of Internal Medicine.—Nine members representing the American College of Physicians (five), and the Section on the Practice of Medicine of the American Medical Association (four). Three of the first group and two of the second to be of professorial rank in approved medical schools of the United States or Canada. The term of office (except for the original appointees) to be six years.

American Board of Neurological Surgery.—Twelve members representing the Society of Neurological Surgeons (five); the Harvey Cushing Society (three); one each from the Section on Nervous and Mental Diseases of the American Medical Association, the Section on Surgery of the American Medical Association, the American Neurological Association and the American College of Surgeons. Term of office (except for portion of original appointees) six years.

American Board of Obstetrics and Gynecology.—Nine members representing the American Association of Obstetricians, Gynecologists and Abdominal Surgeons (three), the American Gynecological Society (three), and the Section on Obstetrics and Gynecology of the American Medical Association (three); term of office six years.

American Board of Ophthalmology.—Twelve members representing the American Ophthalmological Society (four); the Section on Ophthalmology of the American Medical Association (four) and the American Academy of Ophthalmology and Otolaryngology (four); term of office, four years, one member being elected each year by each of the participating societies.

American Board of Orthopædic Surgery.—Nine members representing the American Orthopædic Association (three); the Section on Orthopædic Surgery of the American Medical Association (three) and the American Academy of Orthopædic Surgeons (three). Term of office not specified in the Directory.

American Board of Otolaryngology.—Ten members representing the American Laryngological Association (two); the American Otological Society (two), the American Laryngological, Rhinological and Otological Society (two); the American Academy of Ophthalmology and Otolaryngology (two) and the Section on Ophthalmology, Otolaryngology and Rhinology of the American Medical Association (two); term of office not specified in the Directory.

American Board of Pathology.—Eight members representing the American Society of Clinical Pathologists (four) and the Section of Pathology and Physiology of the American Medical Association (four). Term of office six years.

American Board of Pediatrics.—Nine members representing the American Pediatrics Society (three); the American Academy of Pediatrics (three); the Section on Pediatrics of the American Medical Association, (three). Term of office six years.

American Board of Plastic Surgeons.—Fifteen members representing the American Association Oral and Plastic Surgeons, the Surgical Section of the American Medical Association, the American Surgical Association, the Southern Surgical Association, the American College of Surgeons. The number of representatives from each and the term of office not specified.

American Board of Psychiatry and Neurology.—Twelve members representing the American Neurological Association (four), the American Psychiatric Association (four), the Section on Nervous and Mental Diseases of the American Medical Association (two psychiatrists and two neurologists). Term of office not specified.

American Board of Radiology.—Fifteen members representing the American Roentgen Ray Society (three), the American College of Radiology (three), the American Radium Society (three), the Radiological Society of North America (three) and the Section on Radiology of the American Medical Association (three). Term of office not specified.

American Board of Surgery.—Thirteen members representing the American Surgical Association (three), the Surgical Section of the American Medical Association (three), the American College of Surgeons (three), the Southern Surgical Association (one), the Western Surgical Association (one), the Pacific Coast

Surgical Association (one), the New England Surgical Society (one). Term of office is six years.

American Board of Urology.—Nine members representing the American Association of Genito-Urinary Surgeons (three), the American Urological Association (three), the Section on Urology of the American Medical Association (three). Term of office not specified.

Discussion

Dr. Lee Barry, Saint Paul: Would you answer me whether this Bill 1161 is the wish of the people or the wish of the politicians?

Dr. Zimmermann: I wish it were the desire merely of the politicians, but I am afraid it is the wish of society that something be done. If it were put up to a plebiscite in this country, I am afraid we should have it.

Dr. William Braasch, Rochester: This is a pretty big subject for anyone to discuss in the short time available. I will say this much, however, that I was very much pleased to see that a man of Dr. Zimmermann's intelligence and ability became interested in a subject of this kind, in spite of the large clinical load he carries. I can well remember when a subject of this kind would not interest the average physician and would be left to the medical politicians to worry about. Today most thinking medical men have become interested in the economic aspects of medicine and the problems involved. It is a subject of tremendous importance to the future of medicine.

I quite agree with Dr. Zimmermann that the social implications of medicine in the future will have to be dealt with much more intelligently than they have been in the past. I also think that organized medicine is capable of dealing with its economic problems and I am confident that it will do so in the future. In fact, there is no other group of men in this country who are capable of solving the problems of medical care. With all due respect to the social workers in Washington, they are not the ones to do so. Organized medicine is becoming strong enough so that its members will insist on controlling any plans for the distribution of medical care and to see that it will not be controlled by Federal authorities.

It has been said that the American Medical Association and its subsidiary state organizations are not looking out for the economic interests of medicine. Although these organizations move slowly and conservatively, because they emphasize the scientific side of medicine, much is being done. The new Council on Medical Service and Public Relations will be a powerful factor in solving these problems. The National Physicians' Committee has exerted a powerful impression on public opinion favorable to American medicine. The attitude of the individual physician and his influence on his patients is a great factor in propaganda.

The other day I met a country practitioner who lives a few miles from Rochester. He said, "Doctor, will the Wagner-Murray-Dingell Bill be passed by Congress?" This man is a good doctor, with a rather limited practice. I doubt that he makes over $2,500 a year. He said, "Doctor, if that bill passes, I don't know what we will do. If they are going to tell us how we must practice medicine and take my independence away from me, I will quit medicine." This in spite of the fact that if the bill were passed, the Federal government probably would pay him much more than his present income. However, it is a matter of independence and free enterprise that most doctors wish and which they prize above income.

You spoke about the Advisory Council to the Surgeon General, which is referred to in the Wagner bill. I fear that such a council would not have much power, nor will it be representative of organized medicine. I am reminded of the Advisory Council of the Child Welfare Department, which is charged with taking care of wives and infants of soldiers in service. When that act was drawn up, all details were planned by the Social Security Board, without asking for advice from the medical profession. There is no advisory council which is controlled by Federal Boards that ever will amount to much. Organized medicine and the American Medical Association never have been asked to give advice or counsel of any kind by Federal agencies in drawing up bills affecting the practice of medicine.

I believe you said that there is a general impression that medical research has lagged because of insufficient funds from private sources, and that the Wagner bill will provide large sums of money for this purpose. In the first place, I would question that medical research in this country has lagged. In fact, it has made remarkable contributions in recent years and still is making progress in spite of the war. Of greater importance is the fact that it is the result of private initiative and that it is not controlled by any centralized governmental group. There is an item in the Wagner bill which also refers to the payment of a huge subsidy to medical education. It would be a great misfortune if medical education were controlled by Federal agencies, as would follow if this bill were passed. I would like to ask you if you know of any federal money that did not have a string attached to it in order to keep governmental control.

I believe you inferred that there is widespread public opinion which holds that the doctor is selfish and believes that there is a medical trust controlled by the American Medical Association. The National Physicians' Committee recently has employed the Opinion Research Corporation, which is a branch of the Gallup poll, to make a survey of public opinion regarding its attitude toward the medical profession and to federal control of medicine. According to information recently received from this survey, it is surprising that a considerable majority of those interviewed expressed great respect for medicine as it is now practiced and have confidence in the medical profession. They also believe that the American Medical Association is doing a good job in protecting the interests of health and in advancing medical science. This is quite contrary to the propaganda that has been spread against organized medicine and the American Medical Association. The main criticism expressed was the high cost of medical care. It is also of interest that a majority of those interviewed were opposed to Federal control of medicine.

I am sure that we physicians will eventually solve this problem in the best interests of public health and that organized medicine is strong enough to ward off the threats of Federal control of medicine.

Dr. E. M. Jones, Saint Paul: I was very much interested in Dr. Zimmermann's paper and agree with many of his points.

The public health in this country is on a higher standard than in any other country in the world. Before the war there were about 120,000 practicing physicians in the United States, and I believe that before this conflict is finished over half of these physicians will be in some branch of military service. When our ranks are so depleted it seems unfortunate that we have to face Social Security legislation that amounts to regimenting the medical profession. The men now in service naturally are being regimented, but I do not believe that they will be in favor of regimentation when they return to private practice. I think the public will appreciate the efforts of the doctors that are at

home in attempting to maintain the standards of public health.

I agree with Dr. Zimmermann that the doctors should be consulted regarding legislation that in any way affects the practice of medicine. I also feel that there is a need of some medical plan to take care of people in the lower income group. It would be well if all the doctors familiarized themselves with the bill so they will be able to intelligently discuss it before either lay or professional groups.

The medicine to be practiced under the Social Security Act is termed socialized medicine. I think we have had socialized medicine in some parts of this country for many years. It is bureaucratic medicine that they are trying to force upon us. The bill that is being proposed will, I believe, affect medical education because a student now in medical school puts forth every effort to become as good a doctor as possible. If this legislation is successful, and he realizes that he is to graduate into a regimented form of medicine, I am sure he will not put forth his best effort as a student.

Dr. Wm. Hansen, Minneapolis: I wish to compliment Dr. Zimmermann on his paper this evening. I believe it reëmphasizes the necessity of everyone being more attentive and interested in subjects concerning the medical profession, as he has presented.

Dr. Zimmermann, in closing: I think as individuals, if we feel like writing to our Congressmen, it is all right to do so; but, as organized medicine, we will weaken our position if we do that as a group. The Academy of Medicine or groups of that kind will strengthen their position greatly if they keep out of politics entirely. I don't think we have so much to fear from socialized medicine. If it's coming, it's coming. But the thing we have to fear is the effect of regulated medicine on medical education and the standards of medicine.

I got a letter the other day from a friend in the army. He is in a hospital of 1,700 beds. They have the best medical treatment you could possibly imagine—excellent surgeons, medical men, research workers, pathologists, psychiatrists, dermatologists, neurologists, and every variety of specialist. All the diagnostic apparatus that could possibly be assembled in one institution was there. Soldiers are coming to these hospitals and they are going to enjoy facilities no other institutions in America can supply. That is the thing they are going to have handed to them. They are coming back and see our hospitals which haven't those things. The government is going to build huge institutions, and we are going to compete with them.

My thesis is that if we are going to compete with them we should run them. It can be done and we have the mechanisms for doing it. I think that in twenty years from now you will have found that you have butted your heads against a stone wall trying to protect organized medicine.

As individuals, we can do something. As individuals, by writing your Senators I think you will accomplish as much as members of Guilds or groups—and I think we can accomplish a great deal. This is a plea not for or against socialized medicine. Do what you can to defeat it. Also, organize yourselves in such a way that should it come—and you will have to admit there is grave danger—you would be better off running it than by having a group, such as Dr. Braasch mentioned, running medicine. If organized medicine ran it, it would be better than if it did not.

The meeting adjourned.

Erling W. Hansen, M.D.
Secretary.

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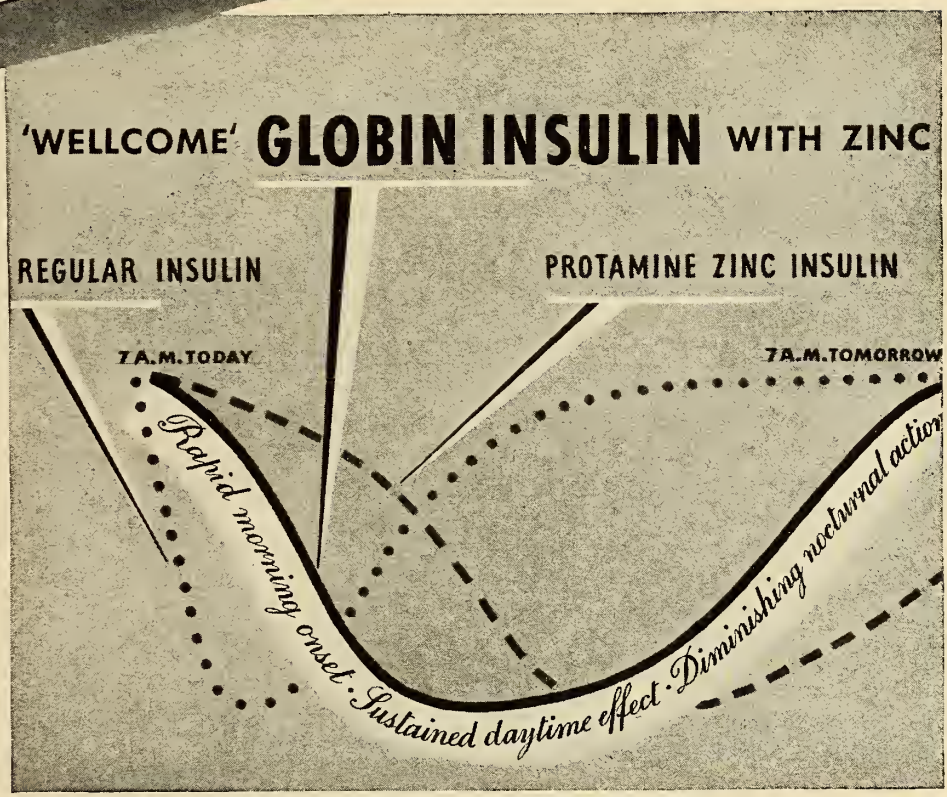
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✦ Reports and Announcements ✦

STATE MEETING

Arrangements are now complete, according to the Committee on Scientific Assembly, for the 91st Annual Meeting of the Minnesota State Medical Association, to be held at the Mayo Civic Auditorium in Rochester, Thursday, Friday and Saturday, April 13, 14 and 15.

Advance reports indicate that it will be one of the largest and most important meetings in the history of the association in spite of wartime difficulties and restrictions. Disapproval voiced by Washington for conventions does not apply to state medical meetings, according to the committee, because these meetings provide the only opportunity available to many busy physicians for essential postgraduate instruction.

A series of symposiums on ever-present problems of the general practitioner feature the program. Among them will be discussions by experts on the handling of peptic ulcer, on pre-operative and postoperative care for bad risk patients, on the new sulfa drugs and penicillin, on anesthesia and on maternal mortality. A carefully selected group of guest speakers will be present, also, including Vice Admiral Ross T. McIntire of the United States Navy. There will be a program of surgical clinics at Rochester hospitals and a series of lantern demonstrations on roentgenological diagnosis, as well as the usual scientific and technical exhibits.

Among out-of-state speakers scheduled to address the convention will be Dr. Ralph S. Bromer of Bryn Mawr, Pennsylvania, director of the X-ray Department of Bryn Mawr Hospital, who will give the annual Russell D. Carman Memorial Lecture in Radiology; Dr. R. M. Waters of Madison, Wisconsin, professor of anesthesia at the University of Wisconsin; Dr. Hugh McCulloch of St. Louis, Missouri, professor of clinical pediatrics at Washington University School of Medicine; Dr. H. T. Kretschmer of Chicago, president-elect of the American Medical Association; Dr. R. W. McNealy, Associate Professor of Surgery, Northwestern University, Chicago; and Dr. J. H. Moore, Chairman, North Dakota State Committee on Maternal Health, Grand Forks, North Dakota.

Other meeting events include eight Round-table Discussion Luncheons scheduled for Friday, April 14; an Open House for all convention visitors in the Auditorium Arena and Theater with a variety show at which the Olmsted-Houston-Fillmore-Dodge County Medical Society and the State Association will be hosts on Thursday night, April 13; and the annual banquet of the Association Friday night, April 14, at the Rochester State Hospital, at which President E. Mendelssohn Jones of Saint Paul and Vice Admiral McIntire will speak.

A luncheon meeting of the Class of 1906, University of Minnesota, will be held at the Hotel Arthur, Thursday, April 13, at 12:15 P. M.

All reservations for living accommodations for the meeting are in the hands of a special committee headed by Dr. A. M. Olsen of Rochester. All who desire reservations in Rochester during the meeting are urgently requested to ask for them immediately on the cards sent out to all members recently from the state office, or by letter.

Rooms have been set aside for meeting guests by all of the Rochester hotels and it is anticipated that these, together with other accommodations secured by the committee, will be sufficient. But reservations should be made promptly and in advance of the meeting dates. Also reservations should be made at an early date for all round-table luncheons and for the banquet, on the card which will reach all members by mail with the program before the meeting. In view of wartime food restrictions it will be difficult to take care of those who neglect to make their arrangements in advance.

SPRING CLINIC SCHEDULE

The Division of Social Welfare Bureau for Crippled Children announces the following Spring Clinic Schedule for 1944:

PLACE	DATE	COUNTIES INCLUDED
St. Cloud	March 25	Stearns, Benton, Sherburne
Worthington	April 15	Nobles, Jackson, Murray, Rock, Pipestone, Cottonwood
Thief River Falls	April 22	Pennington, Marshall, Red Lake, Roseau, Kittson
Austin	May 13	Mower, Freeborn, Steele, Dodge
Detroit Lakes	May 20	Becker, Clay.
Grand Rapids	May 27	Itasca, Koochiching, Cass.
Morris	June 3	Stevens, Pope, Douglas, Grant, Traverse, Bigstone.
Aitkin	June 10	Aitkin, Carleton, Pine, Mille Lacs, Kanabec.

MEDICAL BROADCAST FOR MARCH

The following radio schedule of talks on medical and dental subjects by William A. O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, Minnesota Hospital Association and University of Minnesota School of the Air:

March 11— 9:15 a.m.	(WCCO)	Bronchial Obstruction
March 11—11:30 a.m.	(WLB-KROC)	Medicine in the News
March 15—11:00 a.m.	(WLB)	Health of the Mind
March 18— 9:15 a.m.	(WCCO)	Foreign Bodies in Respiratory Passages
March 18—11:30 a.m.	(WLB-KROC)	Medicine in the News
March 22—11:00 a.m.	(WLB)	Healthful mental attitudes
March 25— 9:15 a.m.	(WCCO)	Thumb Sucking and the Teeth
March 25—11:30 a.m.	(WLB-KROC)	Medicine in the News
March 27— 4:30 p.m.	(WCCO)	Your Hospital in Wartime—the Volunteer
March 29—11:00 a.m.	(WLB)	Recreation and Rest

WASHINGTON COUNTY

The Washington County Medical Society held its regular meeting on February 8, 1944.

"Duodenal Ulcer" was the subject of a lecture given by Bernard Lanin, M.D., Instructor in Surgery, Medical Department, University of Minnesota. After the lecture, numerous questions were asked and answered. The balance of the evening was taken up by local matters and consideration of methods to fight the Wagner-Murray Bill.



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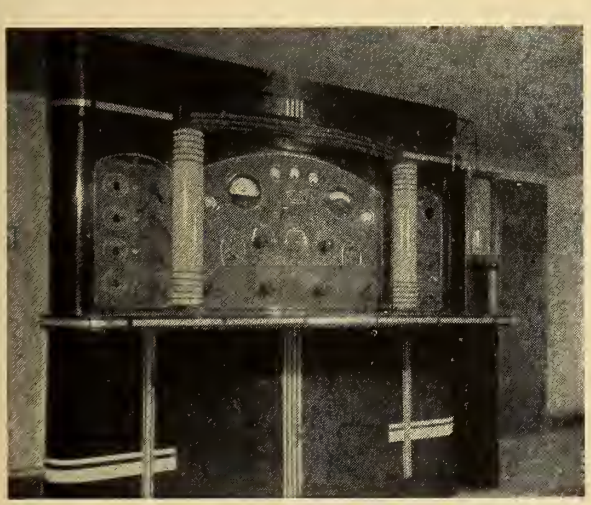
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Mrs. W. H. Rucker, *Editor*
Minneapolis, Minnesota

STATE BOARD MEETING

The Board of the Woman's Auxiliary to the Minnesota State Medical Association met at the Saint Paul Athletic Club, Friday, February 11. Mrs. F. S. McKinney presided, greeting state officers and the representatives of seventeen county groups who attended. Having recently attended a National Board Meeting in Chicago, Mrs. McKinney brought news from that organization and commended the Minnesota counties on their outstanding work for the Medical Surgical Relief Committee which surpassed the work done in any of the other states. She also stated that, according to the national edict, the chief work of every auxiliary member in the United States should be to present to the laity the true facts concerning the Wagner-Murray-Dingell Bill.

The president then asked for committee reports.

Mrs. Anthony Bianco, organization's chairman, reported that Kandiyohi-Swift-Meeker Counties had reorganized (not having functioned since 1937) and that a new auxiliary had been formed in Waseca County.

Mrs. Charles Bolsta, legislative chairman, and Mrs. H. W. Saterlee, public relations chairman, both have chosen to lend their efforts to the defeat of the Wagner-Murray-Dingell Bill, assuming that women's votes will be in the majority for some time to come.

Mrs. E. V. Goltz gave a very interesting description of the Saint Paul Cancer Hospital for indigent patients, and stressed their need for money, drugs and dressings. The latter are being made of discarded materials by county women and sent to the hospital.

Mrs. C. H. Sherman, Hygeia chairman, reported a gift of $240 from the State Medical Association and stated that 182 subscriptions had been placed in many worthy institutions.

Mrs. Asa Johnson, Bulletin chairman, reported sale of forty-one subscriptions, Austin alone having eight of these. This concluded committee reports and the county presidents submitted the following reports:

Waseca County

Organized January 4, 1944, the Waseca County Auxiliary has six members, 100 per cent of available doctor's wives. The Auxiliary has already launched the medical and surgical relief project and intends to make cancer dressings.

Kandiyohi-Swift-Meeker Counties

Reorganized in 1944, the Kandiyohi-Swift-Meeker Auxiliary has eight active members doing Red Cross work.

Washington County

Seven meetings have been held this year. War Services being their special effort, medical and surgical supplies have been gathered and a cadet nursing chairman has been appointed to approach high school girls regarding nurse's training.

Upper Mississippi

The president reported that they have been unable to hold many meetings because of the great distances to travel. Much interest has been shown in the Medical and Surgical Relief project and the T. B. Essay Contest, a local winner having read his essay at their last meeting.

Redwood-Brown Counties

Redwood-Brown counties have eighteen members, seven of which have husbands in the service. Their main activities are Red Cross, sewing, victory aid work, home nursing classes and medical and surgical relief collections.

Ramsey County

Ramsey has twelve new members. The group pays all state and national dues for service doctors' wives, places several *Hygeia* subscriptions, stresses war services and intends to make their public relations meeting the year's highlight, inviting all city organization presidents.

Park Region

The Park Region Auxiliary has had two meetings this year and has admitted four new members. The Auxiliary is assisting in the emergency nursing committee and in the medical and surgical relief committee.

Olmstead-Houston-Fillmore-Dodge Counties

Mrs. Henderson urged all persons wishing to attend the state convention in April to make reservations early as space was at a premium in Rochester.

Hennepin County

Mrs. H. F. Wahlquist reported plans being made for a Public Health Institute to be held in March. Dr. William O'Brien is assisting with arrangements and all city club and union presidents will be invited.

Mrs. Eben Carey, National Auxiliary President, was entertained at a Tea in Minneapolis, February 4, at which time she urged each doctor's wife to appoint herself a committee of one to carry the facts of the Wagner-Murray-Dingell Bill to groups and clubs of the laity.

Stearns-Benton Counties

Chief activities have been the Cadet Nursing Plan and the making of layettes for needy mothers. The sum of fifty dollars was donated to the Saint Cloud Hospital and five dollar prizes to the first ten T. B. Essay winners. Saint Cloud won eighth place.

Southwestern Minnesota

The Southwestern group of counties is considering sub-dividing as distances are too great and members too isolated to coöperate.

Scott-Carver Counties

The last meeting was held February 8, at which time a great many articles were brought in from New



A W O L

Absent With Out Logic

The voluntary choice of remaining at home during two or three days of the menstrual period cuts sharply into the attendance of many women at critical war work.

In special cases, the need for discriminating therapy—analgesic, hormonal, emmenagogic, even surgical—may justify home confinement.

But for so many, absenteeism is motivated solely by a desire to avoid the risk of physical distress and emotional uncertainty, caused by vulval irritation from perineal pads . . . or by fear of olfactory offense . . . or conspicuous bulging under slacks or coveralls.

That such risks can be safely avoided by the use of Tampax menstrual tampons has been known for years by thousands of women in all walks of life—in the theater, in sports, business or social life. For them, this improvement in menstrual hygiene has provided a genuine aid to uninterrupted activity.

They have found that Tampax is free from the prospect of vulvovaginal irritation. It cannot cause noticeable bulkiness, or expose the flux to odorous decomposition. Its three absorbencies permit selection, to meet personal daily needs, amply and safely.

Compression in a *one-time-use* applicator facilitates insertion without orificial stress, and exclusive *flat expansion* assures comfortable accommodation in situ. Special *cross fiber stitching* prevents disintegration of the tampon, so that dainty removal may be effected without probing.

Today the Tampax habit becomes—more than ever—the logical one for adoption . . . and for professional recommendation.

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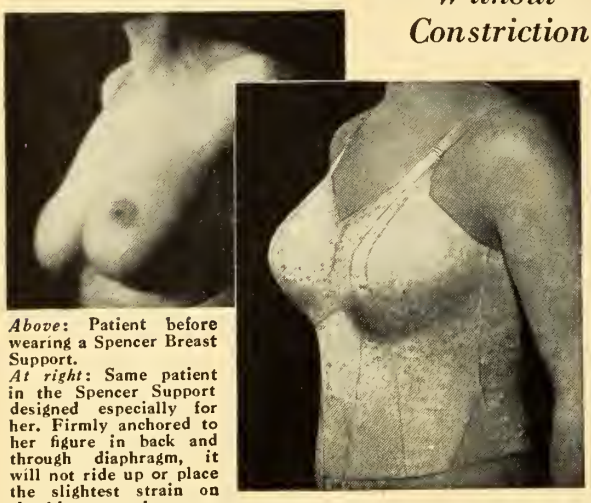
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Address O-3

Prague and Belle Plaine for the Medical and Surgical Relief Committee. Chairmen also reported they have approached all graduating classes regarding Cadet Nursing Corps.

Saint Louis County

There has been excellent attendance at all meetings, the most outstanding being a round-table discussion of the Murray-Dingell Bill at which Dr. Coventry of the A.M.A. Board spoke. Chief projects of the year have been Red Cross, Nutrition and Child Care of Working Mothers.

A Duluth radio station commentator said that the Saint Louis County Medical Auxiliary was one of the most active and worth-while groups of women in the state, of which they are duly proud.

Blue Earth County

Mrs. Sohmer, president, reported her group had met each month and a special effort had been made to secure supplies and make dressings for the Cancer Hospital in Saint Paul.

A very keen interest has been displayed in the medical and surgical supply collection and all members have helped in the nurse recruitment program.

CLINICAL-PATHOLOGICAL CONFERENCE
St. Luke's Hospital—Duluth

(Continued from Page 202)

in vain to pass a rubber catheter into the trachea but the patient died.

DR. A. H. WELLS: At necropsy this patient was found to have been asphyxiated by collapse of the trachea as the result of venous hemorrhage into the neck tissues. There was extensive degeneration and hemorrhage in the periportal areas of the liver.

We are continuing our investigation of the problem of hemorrhage complicating toxemia of pregnancy. It is necessary to measure all the various blood clotting elements including prothrombin, fibrinogen, platelet count and function, blood cotting time and capillary fragility during life before we can arrive at an acceptable conclusion.

Anatomical Diagnosis.—(1) Immediate postpartum status; (2) toxemia of pregnancy; (3) toxic changes in liver, heart, spleen and kidneys; (4) uterine exsanguination.



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In Memoriam

F. F. CLIFFORD

Dr. F. F. Clifford of West Concord, Minnesota, died December 30, 1943, at the age of eighty.

Dr. Clifford, a pioneer doctor of Dodge County, was born October 1, 1863, near Cannon Falls, Minnesota. He attended the Cannon Falls High School and taught in the rural schools of Goodhue County. Later he decided to study medicine and obtained his M.D. from the University of Iowa Medical School in 1885. He began practice at Le Center, Minnesota, but in 1892 moved to West Concord.

Dr. Clifford married Lillian Devan on May 1, 1894. His wife and two daughters, Mrs. Bert Johnson of Fulda and Mrs. Lloyd Amundsen of Rochester, survive him.

Dr. Clifford practiced continuously in West Concord until six years ago when he retired from practice, and for the past two years has been living with his daughter in Rochester. He was a member of the Olmstead-Houston-Fillmore-Dodge County Society, the Minnesota State, and American Medical Associations, and was active in community affairs as Mayor, Councilman, member of the school board, and also as postmaster. Although confirmed in the Episcopal church, he attended the local Methodist church, and in 1905 donated the site of the present Methodist church. He was really one of the pioneers in the practice of medicine in Minnesota.

LEWIS M. DANIEL

Lewis Morgan Daniel, Minneapolis, died November 21, 1943, in Pompano, Florida, where he was visiting friends. Dr. Daniel was born October 11, 1894, in Minneapolis, and attended West High School and the University of Minnesota where he was graduated from the School of Medicine, Class of 1923. He served his internship at Minneapolis General Hospital. His collegiate work was interrupted by service in World War I during which he served overseas as a Lieutenant, Army Sanitary Corps, attached to Camp Hospital No. 68.

Dr. Daniel elected to specialize in internal medicine and was a member of the Minnesota Society of Internal Medicine. In college, he was a member of Alpha Delta Phi, academic fraternity, and Nu Sigma Nu. Dr. Daniel taught in the Medical School from 1925 to 1930. At the time of his death, he was a member of the staffs of Abbott, Northwestern and St. Mary's Hospitals. He also was a member of the Minnesota Pathological Society.

When *The Bulletin of the Hennepin County Medical Society* was launched in 1930, Dr. Daniel was chosen its first editor, serving until 1935 when Dr. Gilbert Cottam took over this duty. Subsequently he was an associate editor for five years and also served his Society as secretary-treasurer from 1938 to 1943.

Possessed of a delightful gift for humor, Dr. Daniel



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enlivened *The Bulletin's* pages with a wit seldom found in medical publications. The most prosaic proceedings or dull reports were likely to be spiced with his delicate touches, a felicitous phrase or a deft thrust at some pompous personage which delighted his colleagues and contributed notably to the popularity of *The Bulletin.* With no apparent effort he dashed off his contributions with an ease and of a quality that would have been the envy of a Bert Leston Taylor or a Franklin P. Adams. Those who appreciated his flair for humor, his gift of phrase and his ability to turn out sparkling copy under pressure of time insisted that Dr. Daniel possessed the ability to have been a top-flight columnist had he elected newspaper work rather than medicine.

The Daniel wit made him a delightful companion and a person frequently drafted for toastmaster at class reunions and fraternity dinners. This sly humor was likely to find expression at the most unexpected moments and his close friends could recount many instances when dull, even solemn, occasions were made memorable by his clever quips.

Probably his best efforts were known only to his intimates. "Louie" took delight in writing whimsical stories and nonsense for his children, a Lewis Carroll type of thing which won his countless small friends and made him and his home their center of entertainment and genuine happiness. Always he brushed aside requests to see these stories with the remark these were merely for the children, hastily written and of no consequence. Scores of yesterday's children would protest such a modest appraisal.

Dr. Daniel had an astonishing capacity for work but he refused to permit the demands of an exacting profession to submerge his natural gaiety and a happy ability to see the lighter side of life. His personal charm was unusual but his colleagues will remember him more especially for his lively wit and the spontaniety of his repartee. They will delight in the memory of one who never succumbed to the drab demands of life, who, while doing his full share of work, found the time and created occasions for enjoying and refreshing his friends. His was a spark which always twinkled but never dulled. —J.H.B.

SIGFRED ENGH

Dr. Sigfred Engh, for many years a practitioner at Jackson, Minnesota, died December 14, 1943, at the age of fifty-eight. He had been incapacitated since March 31, 1941, when he sustained a stroke.

Sigfred Engh was born at Astoria, Oregon, on October 14, 1886. He graduated from St. Olaf College in 1909 with a B.S. degree and taught one year at Canton, South Dakota, before entering medical school at the University of Minnesota where he graduated in 1914.

After completing internship at the Minneapolis General Hospital, he established practice at White Rock, South Dakota, where he enlisted in the United States Army in the spring of 1917. He served nineteen months in the base hospital at St. Maxient, France, and was discharged with the rank of Captain.

From 1919 to 1928, he practiced at Cottonwood, Min-

(Continued on Page 232)



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nesota. Since that time he has been at Jackson, Minnesota, where he passed away after almost three years of illness.

On September 4, 1921, he married Melvina Lerstad of Cottonwood, Minnesota, who with two daughters, Beatrice and Carolyn, survives him. One son, James, preceded him in death.

His hobbies were golf, fishing and hunting and he took an active part in church and civic affairs. He was a member of the American Legion, Kiwanis, and Southwestern Minnesota Medical Society.

Dr. Sigfred Engh was buried with military honors at Jackson, Minnesota.

VERNE C. HUNT

Dr. Verne C. Hunt of Los Angeles, formerly head of a section in surgery at the Mayo Clinic, was shot and killed on December 13, 1943.

Dr. Hunt was born in LaPorte City, Iowa, May 10, 1888. After graduation from Iowa State University in 1911, he received his M.D. from Rush Medical College in 1913, and an M.S. in Surgery from the University of Minnesota in 1918. He served his internship at the Los Angeles County Hospital from July 1, 1913, to January 1, 1915, and became a fellow in surgery in the Mayo Foundation, April 1, 1915. He was appointed head of a section in surgery in the Mayo Clinic in January, 1919, and was associate professor of surgery in the Mayo Foundation. In June, 1930, he left the Clinic to practice in Los Angeles.

Dr. Hunt was one of the founders of the American Board of Surgery, a member of the Mayo Foundation chapter of Sigma Xi, and a member of the Board of Governors of the American College of Surgeons. He was also a member of the Western Surgical Association, the Western Branch of the American Urological Association, the American Medical Association, and Nu Sigma Nu.

WALTER RICHARD SCHMID

Dr. W. R. Schmid, Glencoe, Minnesota, died January 20, 1944, at his home at the age of sixty-five.

Dr. Schmid was born May 17, 1875, in Switzerland, but came to this country at an early age when his parents settled in Rochester, Minnesota. Here he attended the public schools and received his M.D. from the University of Minnesota Medical School in 1903. He began practice at Chisholm and was connected with the B. S. Adams Hospital at Hibbing. In 1917 he took over the practice of Dr. Merritt W. Wheeler in Glencoe, where he actively engaged in practice until a few months before his death.

In 1908 Dr. Schmid married Edith Chappuie of Faribault, who with two daughters, Mrs. Susan Russell of Rochester and Mrs. Ruth Indall of Iowa City, and a son, Dr. Robert Schmid, survive him. His son is at present a commissioned officer serving in the United States Medical Corps at Honolulu.

Dr. Schmid was universally loved and respected by a host of friends and acquaintances and as a practitioner enjoyed the confidence of the public.

EDWIN EVERETT WEBBER

Dr. Edwin Everett Webber, founder and head of the Webber Hospital in West Duluth, died January 17, 1944, at the age of sixty-three.

Dr. Webber was born July 4, 1880, in Saginaw, Michigan. He attended the University of Michigan and obtained his M.D. from Jefferson Medical College in Philadelphia in 1902.

Dr. Webber began practice in Grand Rapids, Michigan, from where he went to Denver, Colorado. In 1910, he located at Buhl, in 1913 moved to Chisholm, and eight years later moved to Proctor, Minnesota, to become chief surgeon for the Duluth, Mesabi, and Iron Range Railway and head of the hospital there. In 1926 he founded the Webber Hospital in West Duluth.

Dr. Webber was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations and was a fellow of the American College of Surgeons. He was also a member of Euclid Lodge, A. F. and A. M., and the Duluth chapter of the Royal Arch Masons. He had served as president of the West Duluth Businessmen's Club and was a member of the Chamber of Commerce.

Dr. Webber is survived by his widow, two sons, Lt. Richard Webber, on duty with the U. S. Navy in the South Pacific, and Pvt. Theodore Webber, stationed with the Army at Santa Ana, California, and a daughter, Clara, of Alliance, Ohio.

ELIZABETH A. WOODWORTH, M.D.

Dr. Elizabeth A. Woodworth, chief bacteriologist for many years of the Minneapolis City Health Department and a pioneer woman physician of Minneapolis, died at the age of seventy after a brief illness on December 15, 1943.

Dr. Woodworth was the daughter of Stephen A. Woodworth and Annabelle Wheeler. She was born on a farm in Dunn County, Wisconsin, on October 29, 1864. She taught school there for some years, and after the family moved to Minneapolis she entered an early class in nursing at St. Barnabas Hospital. She found nursing so interesting that she matriculated a few years later in the University of Minnesota Medical School and received her medical degree in 1901 from the College of Physicians and Surgeons of Hamline University. She located in Minneapolis and was granted a license by examination the same year.

Shortly after she received her license to practice, Dr. Woodworth accepted a position as bacteriologist in the Minneapolis City Health Department. She was promoted to chief of the department in a few years and remained in that position until she retired a few years ago.

Always deeply interested in welfare work, Dr. Woodworth joined a group of Twin Cities women doctors active in social welfare work. Their organization was an outgrowth of similar service carried on by pioneer women physicians of Minneapolis and Saint Paul. Her interest spread, also, to state, national and international activities and she was a member of the Woman Suffrage Association, the Women Voters' League, the National Peace Society, the Foreign Policy Association, the Women's Rotary Club and the Business and Professional Women's Club. At various times she was honored by these clubs for constructive contributions to their work.

Dr. Woodworth was a member of the Hennepin County Medical Society, the Minnesota State and the American Medical Associations and was also a central figure in the American Medical Women's Association, having served at various times in nearly all official positions.

Surviving Dr. Woodworth are two sisters, Mrs. R. B. Luttgren of Berkeley, and Mrs. E. S. Hodgin of Los Angeles, California. —Nellie Barsness, M.D.

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Of General Interest

Dr. E. A. Hackie of Hallock is now a Captain in the Army Medical Corps.

* * *

Lt. C. L. Cain, MC, USNR, of Saint Paul, has reported for duty at the Port of Seattle and has been assigned to service on an aircraft carrier.

* * *

Dr. and Mrs. D. Kalinoff of Stillwater are spending the winter in the Southwest and will visit their daughter in Arizona en route.

* * *

Dr. P. A. Mattison, member of the Winona Clinic staff, will report for duty and training at the Great Lakes Naval Training Station, March 13. He has the rank of Lieutenant Commander.

* * *

Dr. C. A. McKinlay, of Minneapolis, is president of the Asbury Hospital staff for the coming year. Officers serving with him are Dr. D. R. Hastings, vice president, and Dr. Charlotte Morrison, secretary-treasurer.

* *

Dr. Daniel W. Wheeler of Duluth has been promoted to Captain in the U. S. Naval Reserve medical corps, according to word received from the Puget Sound Navy Yard, Bremerton, Washington, where he is stationed.

* * *

Dr. W. M. McKechnie, who retired from the staff of the St. Peter State Hospital last October, has accepted a position with the state hospital at Winnebago, Wisconsin, where he took over his new duties in February.

* * *

For his work in research into the use of penicillin, Dr. Walter E. Herrell of the Mayo Clinic, Rochester, was awarded the Distinguished Service Key by the Junior Chamber of Commerce in Rochester for outstanding achievement in 1943.

* * *

Dr. Albert D. Corniea was elected chief of staff of St. Barnabas Hospital at the annual staff meeting in February. He succeeds Dr. W. B. Roberts. Dr. K. W. Wilder was elected vice chief of staff and Dr. L. A. Whitesell, secretary. Dr. E. J. Lillehei was elected to the executive staff. Dr. Roberts will serve on the executive staff as well.

Dr. O. D. Nelson of Wheaton was named president of the Board of Governors of Wheaton Community Hospital at the first meeting of the Board held late in January. The hospital was opened for patients early in February.

* * *

Dr. C. F. Carstens was named chief of staff of the Hibbing General Hospital at the close of the second year of service of the hospital in February. Dr. C. A. Raadquist was named vice chief, and Dr. F. W. Bachmik, secretary.

* * *

Dr. Lloyd L. Merriman of Duluth has been elected to succeed Dr. Russell J. Moe as chief of staff of St. Luke's Hospital for the coming year. Other officers elected are Dr. O. L. McHaffie, vice chief of staff, and Dr. Selma Mueller, secretary.

* * *

O. J. Hagen, A.M., M.D., L.L.D., F.A.C.S., of Moorhead, Minnesota, was elected Regent of District No. 13 and delegate to the National Assembly and a member of the Board of Governors of the International College of Surgeons at its meeting in Philadelphia, December 19, 1943.

* * *

Lt. Comm. Frederic F. Wipperman of Minneapolis has reported for duty with the Navy Bureau of Medicine and Surgery at Washington after eighteen months as flight surgeon on an aircraft carrier in Pacific war theaters. He has seen action from the Aleutians to the Southwest Pacific.

* * *

Dr. Richard Bardon of Duluth was elected chief of staff of St. Mary's Hospital at the annual meeting held in February. He succeeds Dr. F. N. Knapp. Dr. H. O. Hoff was chosen secretary of staff and Dr. J. R. McNutt was elected chief of staff-elect and will head the organization in 1945.

* * *

According to a recent report of Russian War Relief, Inc., nearly $17,000,000 worth of supplies were shipped to Russia in 1943. Seventy per cent of this was in the form of clothing, and over 20 per cent in medical and surgical supplies. This year the goal of $21,000,000 has been set, $9,000,000 of which will be allocated from the National War Fund.

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H. R. (Bill) Lambert, former representative of the W. F. Prior Company of Hagerstown, Maryland, and a resident of Minneapolis until September, 1939, is desirous of communicating with his friends in the medical profession of Minnesota who may be assigned to Australia. He can be contacted at the Office of the Quartermaster, Service Command B/S7, APO 927, San Francisco, California.

* * *

The community of Kelliher, Minnesota, may have a public hospital within the next ten years, if the amount of $10,000 left in a trust fund to the city by the late Lars A. Olson is used for a nucleus for raising additional funds for a hospital project within the period named. If the fund is not used in the building of a community hospital the amount of $10,000 is to be paid to the State of Minnesota for its use and benefit.

* * *

The marriage of Dr. S. Marx White and Mrs. Jewell Fuller of Minneapolis took place Saturday, January 25, at Mrs. Fuller's apartment. Dr. George P. Conger of the University of Minnesota, read the service. Dr. and Mrs. White left for a trip East, stopping at Wilmette, Illinois, where they visited Dr. White's son-in-law and daughter, Mr. and Mrs. James Coffield, Jr. They also visited the doctor's son and daughter-in-law, Major and Mrs. Asher White of Oak Ridge, Tennessee.

* * *

Dr. Oliver M. Porter has returned to Minnesota from Sisseton, North Dakota, where he has practiced his profession for the past several years. He has opened offices for the practice of medicine and surgery in Willmar, returning to the community near which he practiced in the early part of his career. He practiced at Atwater immediately following graduation from the University of Minnesota and was associated with the Nicollet Clinic in Minneapolis before going to North Dakota.

* * *

Dr. Paul Cress, who several months ago re-opened the Cress Hospital at Ellsworth, originally established by his father, Dr. P. J. Cress, has been called to active duty as a first lieutenant in the Marine Corps Medical Reserve. As the elder Dr. Cress is now located in California, the hospital may be closed again until such time as Dr. Paul Cress returns from the service.

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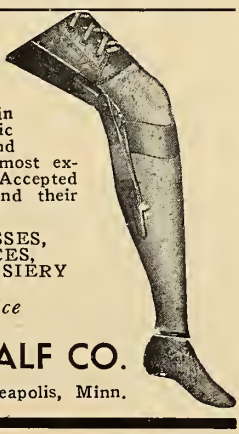
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MEDICINE—Two Weeks' Intensive Course Internal Medicine starts June 19. Two Weeks' Course Gastro-Enterology starts June 5.

GYNECOLOGY—Two Weeks' Intensive Course starting April 3 and June 12. One Week Personal Course Vaginal Approach to Pelvic Surgery starting April 17.

OBSTETRICS—Two Weeks' Intensive Course starting April 17 and June 26.

ANESTHESIA—Two Weeks' Course Regional and Intravenous Anesthesia.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

SYNOPSIS OF MATERIA MEDICA, TOXICOLOGY AND PHARMACOLOGY. Third Edition. Forrest Ramon Davison, B.A., M.Sc., Ph.D., M.B. Formerly Assistant Professor of Pharmacology, School of Medicine, University of Arkansas, Little Rock. Medical Department, Upjohn Co., Kalamazoo, Michigan. 759 pages. Illus. Price, $6.50, flexible binding. St. Louis: C. V. Mosby Co., 1944.

SYNOPSIS OF OBSTETRICS. Second Edition. Jennings C. Litzenberg, B.Sc., M.D., F.A.C.S. Professor Emeritus of Obstetrics and Gynecology, University of Minnesota Medical School, Minneapolis. 405 pages. Illus. Price, $5.00, flexible binding. St. Louis: C. V. Mosby Co., 1943.

HANDBOOK OF NUTRITION. Council on Foods and Nutrition of the American Medical Association. 586 pages. Illus. Price, $2.50, cloth. Chicago: American Medical Association, 1943.

STROPHANTHIN. Clinical and Experimental Experiences of the Past 25 Years. Brun Kisch, M.D. Formerly Professor on the Medical Faculty of Cologne University (Germany), Visiting Professor of the International University in Santander (Spain). Research Fellow at Yale University. 158 pages. Illus. Price, $4.00, cloth. New York: Brooklyn Medical Press, 1944.

ORAL PATHOLOGY: A Histological, Roentgenological, and Clinical Study of the Diseases of the Teeth, Jaws, and Mouth. Kurt H. Thoma, D.M.D. Professor of Oral Surgery and Brackett Professor of Oral Pathology, Harvard University; Oral Surgeon and Chief of Dental Service, Massachusetts General Hospital. 2nd ed. 1328 pages. Illus. Price, $15.00, cloth. St. Louis: C. V. Mosby Co., 1944.

Dr. Thoma has long enjoyed an enviable reputation as an author in medical and dental research. The second edition, with its numerous illustrations, many of which are in color, are the finest I have ever seen, having had quite a little experience in color photography myself.

His findings, diagnosis and treatments are written in the language we all understand.

To the men who have been doing oral surgery for many years, it is very refreshing to read and collaborate with the author on how we have handled parallel cases, and have had an opportunity to see our end results years later.

This edition, which has required so much time and effort to produce, should be in the library of everyone in all branches of the healing art.

E. D. BETTENHAUSEN, D.D.S.

A PRIMER OF THE PREVENTION OF DEFORMITY IN CHILDHOOD. By Richard Beverly Raney, B.A., M.D., in collaboration with Alfred Rives Shands, Jr., B.A., M.D. Illustrated by Jack Wilson. 188 pages. Price $1.00. Elyria, Ohio: National Society for Crippled Children, Inc., 1941.

The first chapter treats of the definition and causes of the common affections of childhood which may cause deformity. The subsequent three chapters describe in regional order the most important deformities of childhood, with a discussion of their common causes and prevention. The nomenclature makes use of common and well-known terms, and the glossary and index furnish an accurate alphabetical reference. Eighty-eight figures comprise the informative illustrations. This primer has been written plainly and simply for the family doctors, the welfare workers, and the public health nurses and it should stimulate a new interest in the prevention and the treatment of the affections which cause crippling.

LILLIAN L. NYE, M.D.

MANAGEMENT OF THE SICK INFANT AND CHILD. By Langley Porter, B.S., M.D., M.R.C.S. (Eng.), L.R.C.P. (Lond.) and William E Carter, M.D. Sixth Revised Edition. 977 pages. Price $11.50. St. Louis: The C. V. Mosby Company, 1942.

The physician notes with much sentiment the dedication to the three generations of pediatricians. A warm welcome is given the inclusion of the "child" in addition to the "Management of the Sick Infant." This sixth edition embodies advancing knowledge in pediatrics and allied fields. It is a pleasure to note the list of





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those to whom the authors' thanks are extended. This book presents in a single volume exactly what you will want in the management of the sick young as well as the normal growing young. The chapters devoted to methods, formulas, recipes, and drugs are invaluable. The reviewer heartily recommends the book.

LILLIAN L. NYE, M.D.

CLINICAL LABORATORY METHODS AND DIAGNOSIS. R. B. H. Gradwohl, M.D., D.Sc., Director of Gradwohl School of Laboratory Technique; etc., Third edition. Two volumes (12 lbs.) 2230 pages. 726 illustrations. St. Louis, Mo.: C. V. Mosby Co., 1943. Price $20.00, cloth.

This work represents a noble attempt at collecting many of the better medical laboratory procedures (not including tissue diagnosis) under one title. The important sciences of chemistry, bacteriology, serology, and parasitology receive fairly good space while others such as mycology, toxicology and histologic technique are skimmed over. Similar peculiarities occur in the various specific fields; for instance, there are fifteen pages devoted to blood iodine and nine pages devoted to blood amylase but nothing can be found on blood lipase. Other omissions such as the pancreatic function test of Ägren, Lagerlöf and Bergulund or the measurement of sodium bicarbonate secretion of the pancreas are noted. Mistakes such as the statement on page 209, "In all cases of gout the uric acid is increased . . . ," are inexcusable.

The discussions of certain tests have a brief selection of authoritative references, and apparently are not intended to be complete. The omission of an evaluation of such tests as the colostrum skin test for pregnancy is bad. Why authors so often copy the dogmatic statements concerning the interpretation of the terms direct, biphasic and indirect van den Bergh reactions from one book to another without giving the unwary student a practical evaluation of the tests is beyond me. No attempt has been made by this reviewer to study the many laboratory procedures for errors in transcription.

In conclusion, this two-volume book can be recommended as a collection of most of the laboratory procedures now in general use. The chapter on parasitology derived mainly from Professor Pedro Kouri of the University of Havana deserves special mention.

ARTHUR H. WELLS, M.D.

CLINICAL-PATHOLOGICAL CONFERENCE

Minneapolis General Hospital

(Continued from Page 201)

amination appears to point more strongly to tuberculosis than does an uncomplicated spontaneous pneumothorax.

DR. STOESSER: These cases are seen quite frequently in children during the hay-fever season. They are usually sent in with the diagnosis of asthma, and the pneumothorax may not be suspected because of the already present severe dyspnea. On physical examination, however, we have found a number of asthmatic children to be actually suffering from a spontaneous pneumothorax. Pain is often not a prominent symptom. I believe this condition is much more common in children during the hay-fever season than is commonly recognized. I would like to emphasize the importance of a physical examination in asthmatic children.

DR. SHER: We find that almost 60 per cent of tracheotomies in the Pediatrics department show a pneumothorax by x-ray following surgery. This can be picked up almost immediately after the tracheotomy if an x-ray is taken, and will usually disappear in a few days. I believe it is important to x-ray the chest of children following tracheotomy. As a rule, these pneumothoraces are asymptomatic and will clear up spontaneously.

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Minnesota Medicine

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Volume 27 April, 1944 No. 4

POSTERIOR HERNIATION OF THE INTERVERTEBRAL DISC

An Analysis of Sixty-five Cases

WILLIAM T. PEYTON, M.D., and JULES D. LEVIN, M.D.
Minneapolis, Minnesota

MANY comprehensive papers and several symposia have been published in the current literature on the so-called syndrome of the herniated disc and its treatment. Surprisingly little, however, is to be found in any of these papers regarding detailed follow-up studies to determine the effect of operation on the symptoms and physical signs of herniated disc.

This paper deals only with the herniated disc lesion in the lumbar spine, and is essentially a follow-up analysis of sixty-five cases of herniated disc, analyzed as to change in the individual symptoms and signs. The material included in this study represents all of the cases of herniated disc seen and treated by operation at the University of Minnesota Hospitals by the Division of Neurosurgery up to August 1, 1942. The first laminectomy performed here for herniated disc was in 1938. Hence the maximal period of follow-up is approximately five and one-half years; the minimal period of observation is eighteen months. The series includes sixty-five cases upon whom laminectomy was performed after the diagnosis of posterior herniation of intervertebral disc was made.

Terminology

The most nearly accurate description of this clinico-pathological entity according to the manner of its production is "rupture of the annulus fibrosus with postero-lateral or posterior herniation of the nucleus palposus."[6] The more popular terms employed, however, include herniated disc, protruded disc, ruptured disc, and posterior herniation of the intervertebral disc.

Incidence

There appears to be a definite age incidence in herniated disc. Lesions in the first decade of life have not been reported. They occur occasionally in the second decade, and most frequently in the third, fourth, fifth and sixth decades, with a maximum of 35 per cent in the fourth decade, but they are found even in the seventh and eighth decades. Probably on account of occupation and exposure, 70 to 75 per cent of these lesions occur in the male. The sixty-five cases reviewed include eighteen female and forty-seven male patients, ranging in age from seventeen to sixty-four years; the age distribution by decades was as follows:

INCIDENCE BY DECADES
(University Hospitals Series)

	Cases	*Percentage*
Below 20 years	3	5
20 to 30 years	12	19
31 to 40 years	21	32
41 to 50 years	23	35
51 to 60 years	4	6
Above 60 years	2	3
	65	100

From the Division of Neurosurgery, Department of Surgery, University of Minnesota Hospitals, Minneapolis, Minnesota. Read before the Minneapolis Surgical Society, Minneapolis, December 2, 1943.

Supported by grants from the Graduate School of the University of Minnesota for experimental surgical research.

Clinical History—A history of trauma to the spine, caused by lifting, slipping, sudden twisting, or forcibly falling on the buttocks, can usually be elicited as having preceded the onset of backache. Such a history of trauma as an etiological factor in herniated disc as given by various observers is listed below:



Fig. 1. Loss of lumbar curve.

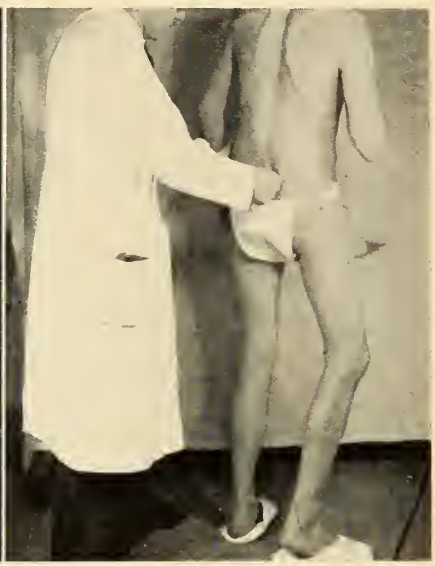


Fig. 2. Testing for tenderness over vertebral interspaces.

TRAUMA AS AN ETIOLOGICAL FACTOR
(Comparison of Series)

	Cases	*Percentage*
Barr[1]	58	77
Fincher[9]	50	70
Bradford and Spurling[5]	35	50
University Hospitals	65	67

Symptomatology in Lumbar Herniated Disc

Surgical experience indicates that this lesion is a common cause of low bachache with sciatic syndrome. Many backaches heretofore ascribed to vague causes, such as lumbo-sacral and sacro-iliac strain, undoubtedly represent cases of herniated disc.

The most common initial symptom in herniated disc in the lumbar region is low backache; it occurs in 70 per cent of all cases. However, the most typical symptom is pain in the distribution of the sciatic nerve of the involved side, i.e., in the gluteal region, postero-lateral aspect of the thigh, region of hamstrings, and the posterior calf. The sciatic syndrome rarely appears simultaneously with the onset of backache, but more often occurs some time after the onset of the backache, and frequently only after repeated slight trauma or strain of an already painful back. Bradford and Spurling[6] report bilateral sciatic pain in 15 per cent of cases, but we have found it in only 6 per cent, that is, in four cases, two of which were midline disc lesions.

The pain is usually aggravated by any condition (such as coughing, sneezing, laughing, and defecation) which suddenly increases the intra-abdominal pressure, which in turn increases the venous pressure in the spinal canal; the pain is also aggravated by any activity that stretches the sciatic nerve, as flexion of the spine. Remissions and exacerbations are common, occurring in 40 to 50 per cent of the cases; however, the pain usually occurs in episodes of ever-increasing severity until eventually the patient is totally incapacitated. Subjective sensory changes, or paresthesias, may be present and take the form of numbness, tingling, burning, stinging, prickling, creeping, and crawling sensations. Their location is of more value than the location of pain in determining the site of the disc lesion. Postural changes, when present, are those which in the past have been considered classical of sciatica. Weakness, paralysis, loss of bowel and bladder function, and atrophy are present only with large protrusions which compress the cauda equina. Neuroses may simulate herniated intervertebral

disc and the differential diagnosis of these two conditions is frequently most difficult. Eight (12.3 per cent) of the cases reviewed were complicated by neuroses. Some of the explorations were negative, and with added experience we believe some of these negative cases explored would now be recognized as neuroses simulating herniated disc and operations would not be performed.



Fig. 3. Straight leg raising test.



Fig. 4. Lasègue test (See footnote page 266).



Fig. 5. Naffziger test.

Physical Findings in Lumbar Disc Herniations

The physical findings are frequently quite typical, but are not usually or necessarily elicited in a general routine physical examination. They must be kept in mind and looked for when herniated disc is suspected. The more important signs, and the special maneuvers performed when the presence of a herniated disc is suspected, are discussed below.

Posture—is frequently characteristic; there is usually some degree of obliteration of the normal lumbar lordosis, varying from mild straightening of the lumbar spine to actual reversal of the lumbar curve with kyphosis and a fixed and rigid spine (Fig. 1). Motion in the lower spine, especially flexion and extension, is markedly limited. In addition, some of these spines have scoliosis, with listing away from the side of the lesion. The customary habitus, and that of greatest comfort, is one of slight flexion of the trunk with thigh and leg also slightly flexed, and the foot in plantar flexion. Free and easy motion of the spine is always inhibited; movement is most deliberate, slow, and cautious.

Muscle spasm of the erector spinæ group in the lumbar region is frequently a prominent feature, and at times the inequality of the spasm on the two sides is visible as a difference in prominence of the paravertebral muscle groups. Palpation readily confirms the presence of absence of spasm and the comparative degree of spasm on each side.

Space tenderness or tenderness to deep pressure in the area overlying the involved interspace, lateral to the spinous process, frequently aids materially in localizing the lesion as to space. Frequently palpation may have to be rather forceful in order to overcome the muscle spasm. Point tenderness may thus be determined at the site of the lesion, and if such a maneuver results in sciatic radiation of pain, the localization of the lesion is in this way confirmed (Fig. 2).

Sciatic tenderness or tenderness to palpation somewhere along the course of the sciatic nerve is generally present. The most frequent sites of tenderness are the regions of the sacro-iliac joint, gluteal muscles, and posterior aspect of the thigh.

Sciatic nerve stretching tests include those maneuvers which stretch the sciatic nerve mechanically, thereby intensifying the pain and increasing the manifestations of root irritation. The tests used in this clinic are listed below:

Straight leg-raising test—With the patient in the recumbent position, the extended lower extremity is raised (Fig. 3). The excursion of the extremity from the horizontal position to the position in which the patient first complains of backache, sciatic pain, or painful tightness of the hamstrings, marks out an arc which is recorded in degrees. During the test the leg must remain completely extended. The limitation in straight leg raising is recorded in degrees for both extremities. Inequalities in the value on the two sides are of greater significance than an apparently diminished value when the painful side

only is tested, since the excursion varies with age and degenerative processes such as arthritis and previous trauma, and depends upon individual mobility.

Lasègue test[14]—With the patient in the recumbent position, the leg is flexed on the thigh and the thigh on the abdomen. The leg is then slowly extended, keeping the thigh flexed. The presence of pain in the back or tightness in the hamstrings in any position less than 120 degrees constitutes a positive test (Fig. 4). There exists much disagreement in the method of performing the Laseque test. Some clinics interpret the maneuver described above as the straight leg-raising test to be the Laseque maneuver.* However, there is complete accord as to the interpretation and significance of these tests: a positive test is evidence of rootlet irritation.

Naffziger test[19]—This is a modification of the straight leg-raising test. With the patient in the recumbent position, the foot is forcibly dorsiflexed on the leg. As the extended extremity is raised, this dorsiflexion of the foot further stretches the sciatic nerve and causes increase in the backache and pain along the posterior thigh. This test is usually positive at an angle of elevation 5 to 10 degrees less than the straight leg-raising test, and is useful to confirm the findings of the straight leg-raising test (Fig. 5).

Duncan's alternate push and pull test[5]—Upward pressure on the painful leg with traction on the painless leg should increase the pain in the back, and the reversal of the procedure, i.e., traction on the painful leg and upward pressure on the painless leg should lessen or relieve the pain. The test is based on the fact that lateral flexion of the spine thus produced will usually effectively compress or decompress a lesion, and thus increase or decrease the pain as the case may be. Especially is this so if the lesion is lateral in position.

Duncan's hyperextension of the spine[8]—With the patient in the supine position the legs are allowed to hang over the end of the examining table (as in the Walsher position), thus tending to produce an increase in lumbar lordosis. In a typically positive test, there is first a latent period of from one to two minutes during which time the patient is free from pain; this is followed by a steadily rising tide of peripheral pain. Flexion of both extremities on the trunk usually affords complete relief of this pain.

Knee-rocking test—The patient is placed in the supine position. One hip and knee are so flexed as to place the external malleolus on the patella of the opposite extremity. This can be done in the normal individual easily and without discomfort. If the case is one of arthritis of the hip joint or other hip joint disease, pain is promptly elicited upon depressing or rocking the knee.

Bonnet test[3]—With the patient in the supine position, the thigh and knee are acutely flexed on the abdomen and the thigh is then adducted, thus putting the capsule of the sacro-iliac joint on the stretch, and if pain is present in the sacro-iliac region the test is positive. This test was developed as a test for sacro-iliac joint disease, but a positive Bonnet test is also frequently present in herniated disc lesions.

Jugular compression test[20]—With the patient erect, a blood pressure cuff is placed about the neck. The cuff is inflated to 40 mm. Hg and pressure is maintained for two minutes. The return of venous blood from the head is thus impeded with resulting increased intracranial pressure, and, by transmission, increased intraspinal pressure. This test exaggerates pain if it is radicular in origin. Variation of pressure rather than maintenance of increased pressure causes pain. Hence the patient may also have increased pain with sudden release of the cuff pressure. This test is usually positive in those cases in which pain is also exaggerated with coughing and sneezing. A positive test is said to be pathognomonic of intraspinal disease.

Changes in reflexes—The most common abnormality found on neurological examination of patients suffering from herniated disc is diminution or absence of the achilles reflex on the affected side. This phenomenon has been reported to occur in as many as 80 per cent of herniated disc lesions. Diminution in the knee reflex occurs

*This variation in the Lasègue test is, no doubt, due to the fact that Lasègue[14] did not adequately describe any of these tests. We have designated these tests as above for convenience of expression. It would be equally proper to designate either or both of them as the Lasègue test.

much less frequently. Absence of an achilles reflex suggests a lesion at the lumbosacral space or the fourth lumbar space, while absence of a knee jerk is an indication that the lesion is at or above the third lumbar space. Reflex changes occurring in the cases reviewed are shown in the table below:

REFLEX VARIATION
(University Hospitals Series)

	Cases	*Per cent*
Changes in A. J.	42	64
Changes in K. J.	13	20
Changes in both A. J. & K. J.	9	14
Changes in K. J. only	4	6

Sensory changes—Objective sensory changes occur as hypesthesia and hypalgesia. Paresthesias, or spontaneous subjective sensations of tingling and numbness, occur more often without objective sensory changes. When only one rootlet is involved with compression by the disc, subjective sensory changes may or may not be present. However, when two or more rootlets are involved (and two rootlets are compressed more frequently in the lumbosacral herniations than in those of the third and fourth spaces), objective sensory findings are usually present. The most frequent site of sensory changes is the lateral aspect of the leg and foot, i.e., in the distribution of the fourth and fifth lumbar and first sacral segments. A comparison of the incidence of objective sensory findings as reported from various clinics is shown below:

INCIDENCE OF OBJECTIVE SENSORY CHANGES

	Per cent
Spurling and Bradford [6]	75
Love and Walsh [17]	31
Fincher [9]	85
University Hospitals Series	40

Atrophy and muscle weakness, and even complete paralysis of the lower extremities, may result occasionally, especially if the herniations are large and midline.

Lumbar Puncture—Disturbance in the dynamics of the cerebrospinal fluid is rarely found because the lesion is usually small and lumbar puncture is usually performed above the level of the lesion. Elevation of the protein is the only abnormality found in the cerebrospinal fluid, and it varies in relation to the site of the tap, i.e., punctures made high above the lesion will tend to have normal or at least lower protein values than those made close to or below the lesion. Elevated protein values have been reported in as high as 80 per cent of cases with herniated disc, but we have found that they were greater than 40 mgs. per cent in only 42 per cent of the cases reviewed.

Roentgenology—Roentgenograms of the lumbosacral region are always made when an intervertebral disc lesion is suspected. Direct evidence of a herniated disc is rarely obtained from these films, but they are necessary to rule out other lesions involving the bone, which sometimes give symptoms and physical signs similar to those present with a disc lesion. However, the intervertebral space with a ruptured annulus fibrosus and postero-lateral herniation of the nucleus palposus may become narrowed; it is a rather infrequent finding, occurring only in twelve of fifty-five cases or 22 per cent of the verified disc lesions reviewed. Even when present, a narrowed space is not conclusive evidence of a herniated disc lesion at that level.

Myelography

The use of some type of contrast medium injected into the subarachoid space of the spine is frequently very desirable and at times a necessity in the localization of herniated disc. Air, as a contrast medium, was given a relatively extensive trial in this clinic, but found to be rather unsatisfactory for several reasons. The resulting headache and increased pain which occurred quite frequently as sequellæ, were disturbing to the patient; the roentgenographic contrast with air was so slight that the interpretation was difficult and inaccurate. Lipiodol, on the other hand, gives excellent contrast and a minimum of reaction, but, of course, has the disadvantage that it is not absorbed. This disadvantage has now been almost completely eliminated, since by the technique developed and described by Kubic and Hampton[13] the oil can almost always be removed quite completely. This technique, with some modifications,[12] is now used in this clinic.

Pantopaque,* which gives slightly less contrast than lipiodol but is slowly absorbed and can be aspirated more readily than lipiodol, has been tried in this clinic and found satisfactory. At present, however, it is not available to us because of governmental priorities.

*Ethyl iodophynylandecylate prepared by the Department of Radiology of the School of Medicine and Dentistry of the University of Rochester, New York.

Roentgenological examination with contrast media should be employed only after a careful and detailed neurological examination has been done. Spinograms or contrast medium myelograms, sometimes demonstrate defects that are probably due to anatomical variations in the intervertebral discs rather than true disc lesions. Occasionally, although it has not occurred in our experience, such x-ray examinations may fail to demonstrate disc herniations which are demonstrated at surgery.

The diagnosis of herniated disc can frequently be made by history and physical examination, and accurate localization of the disc involved can also in some cases be made on these data.

The following shows an analysis of the findings at myelography correlated with the surgical findings in the cases reviewed:

MYELOGRAPHY: OIL AND AIR AS CONTRAST MEDIA

	Surgical Exploration				Myelography Not Done
	Oil		Air		
	Pos	Neg	Pos	Neg	
Disc lesion found	21	0	29	3	5
No disc lesion found	5	2	3	2	1
Totals*	26	2	32	5	6

Myelograms performed ..... 59 cases
Myelograms repeated ..... 6 cases
Myelograms not done ..... 6 cases

*The total is seventy-one because in six myelography was repeated.

Site and Incidence of Disc Lesions

Herniated discs occur in all parts of the vertebral column, from the first cervical vertebral interspace to the sacrum, but 90 to 95 per cent of them occur at either the fourth lumbar space or the lumbosacral space.

The incidence of distribution of disc lesions at the fourth and fifth lumbar interspaces, as reported in the literature, is given below:

	Fourth Space *Per cent*	*Fifth Space* *Per cent*
Barr[1]	68	32
Mixter[18]	67	33
Love and Walsh[17]	45	55
Bradford and Spurling[5]	33	67
University Hospitals Series	52	48

The distribution of disc lesions according to vertebral level in the cases reviewed is shown in the following chart:

DISTRIBUTION OF DISC LESIONS BY LEVELS

	Cases	*Per cent*
Thoracic 11th space	2	3.6
Lumbar 3rd space	3	5.4
Lumbar 4th space	26*	47.4
Lumbosacral space	24	43.6
Total		100.0

*In one of these cases there were additional herniations at the twelfth thoracic and second lumbar spaces.

Multiple disc lesions occur but are rather unusual; their incidence is as follows:

	Per cent
Love and Walsh[17]	12.0
University Hospitals Series	3.5

Differential Diagnosis

Some of the diseases which produced symptoms and findings similar to the syndrome of the herniated disc as encountered in this clinic were: Primary and metastatic neoplastic lesions of the lumbar spine and pelvis, tumors of the cauda equina, spondylolisthesis, tuberculosis of the lumbar spine, brucellosis of the lumbar spine, herpes zoster involving the lumbar and sacral segments, blood dyscrasias as Hodgkins and leukemia, syphilis, and neurosis. Neurosis is the condition that most frequently simulated disc lesions.

Treatment

During the initial episode of pain or sometimes in the presence of an acute and severe exacerbation of the pain, the patient is placed on a bed and mattress which do not sag. Buck's extension and heat are applied on the affected side, and narcotics are administered for relaxation of muscle spasm and relief of pain. Many patients are relieved by these measures, and apparently some of them never require later operation. Surgical removal of the herniated disc is necessary for permanent relief of continued and recurrent attacks of backache.

The manner of surgical approach has been changed with the cumulative experience of the surgeons interested in disc lesions. During the earlier years a bilateral and total laminectomy was performed routinely in all cases of herniated disc; during later years a hemi-laminectomy was done; most recently a partial hemi-laminectomy is the favored approach, that is, the proper interlaminar space on the side of the lesion is merely enlarged by rongeuring away the edges of the lamina. The procedure chosen, of course, de-

pends on the size and location of the lesion. In very large or midline lesions, bilateral total laminectomy is probably still the proper procedure. At least total laminectomy with transdural removal of the herniated disc seems preferable to us in very large herniations because in such lesions the spinal fluid, which should buffer the rootlets against injury when they are retracted, is replaced by more or less solid disc tissues, and retracting the rootlets of the cauda equina against this lesion may result in rootlet trauma with postoperative paralysis of the involved roots.

Recurrence of herniated disc has been reported both at the same location and in another space. Loss of the nucleus palposus with consequent defective distribution of weight in the remaining portion of the herniated nucleus palposus or incomplete removal of all loose fragments may account for recurrence in the same space. Some type of spinal fusion which would immediately wedge the vertebra apart and fix them in this position should prevent such a recurrence.[4,7,10] We are now doing this type of fusion, at least, on all patients who must return to heavy labor. The incidence of recurrence is shown below:

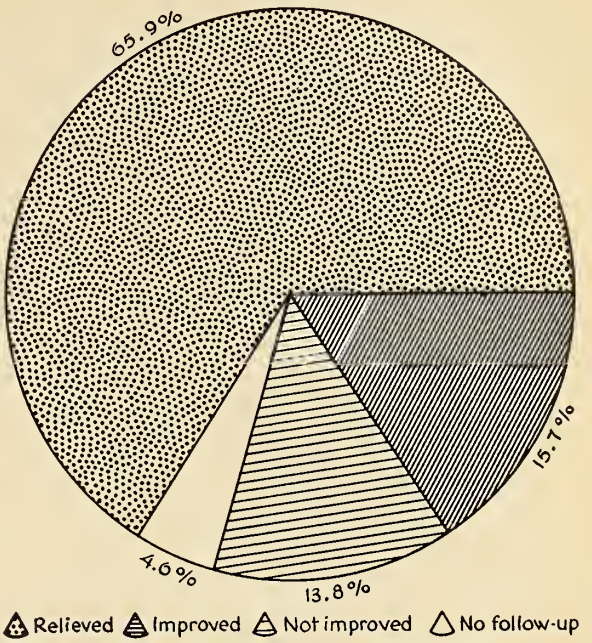


Fig. 6. Results of operation in the treatment of herniated intervertebral discs.

COMPARISON OF SURGICAL RESULTS AS REPORTED

Source	Number of Cases	Per cent			
		Relieved	Improved	Poor Result	Not Followed
Love and Camp[16]	50	66	30	4	0
Bar[2]	58	83	—	5	12*
Fincher[9]	50	80	10	10	0
Bradford and Spurling[5]	35	74	—	26	0
Hawk[11]	10	30	10	50	10*
University Hospitals Series	65	66	15.4	14	4.6

*Includes deaths

	Number of Cases in Series	*Recurrence Cases*	*Percent*
Love[15]	150	1	0.7
Bradford and Spurling[6]	160	4	2.5
University Hospitals Series*	55	1	1.8

*Five patients were reoperated upon, but in only two cases were recurrences found; one at the same site, and one at a different interspace. In addition, three of ten patients found to be negative at the first operation, had another later exploration, but in only one case was a disc lesion found at second operation, and this lesion was at another space than that explored at original surgery.

RELIEF FOLLOWING SURGERY

	Number of Cases	*Per cent*
Relieved	43	65.9
Improved	10	15.7
Not improved	9	13.8
No follow-up	3	4.6
Total	65	100.0

Results

In computing the results, anatomical projections were considered to be a normal variation; and only when there was definite evidence of degeneration as evidenced by fragmentation were discs considered to be herniated. The results were as follows:

	Number of Cases	*Per cent*
Disc lesion found at surgery	55	84.2
No disc lesion found at surgery	10	15.8

RESULTS OF SURGERY CORRELATED WITH SURGICAL FINDINGS

	Disc lesion removed at operation		No disc lesion found at operation	
	Cases	Per Cent	Cases	Per Cent
Relieved	37	56.9	6	9.2
Improved	8	12.3	2	3.2
Not improved	6	9.2	3	4.5
No follow-up	3 cases 4.6%			

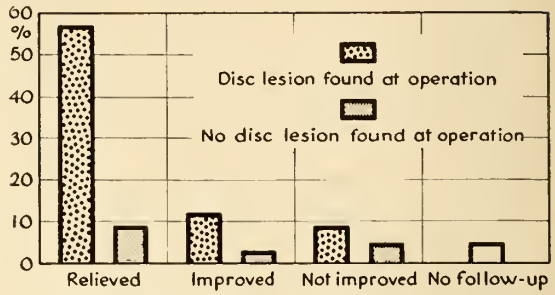


Fig. 7. Results of operation in the treatment of herniated intervertebral discs correlated with the findings at operation.

There was a history of trauma in forty-four (67.3 per cent) of the sixty-five cases reviewed. The frequency of the incidence of other symptoms and the effect of operation in relation to these symptoms are tabulated below:

EFFECT OF OPERATION ON THE SYMPTOMS

Symptom	Pre-operative		Postoperative	
	Cases	Per Cent	Cases	Per Cent
Backache	65	100.	19	29.1
Sciatic syndrome	63	96.4	18	27.5
Pain increase with cough and sneeze	58	88.7	15	23.0
Paresthesias	27	41.3	24	36.7

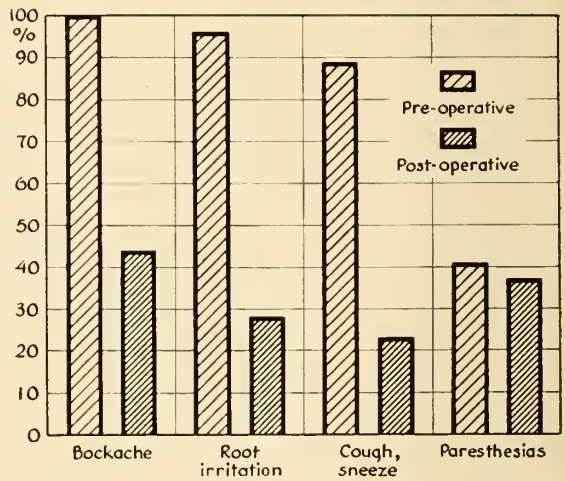


Fig. 8. Relief of symptoms by operation for herniated intervertebral disc.

The incidence of the more common physical signs and the effect of operation on these signs are tabulated below:

EFFECT OF OPERATION ON PHYSICAL FINDINGS

Signs	Before Operation		At Follow-up Examination	
	Cases	Per Cent	Cases	Per Cent
Obliteration of lumbar curve	63	96.4	41	62.7
Paravertebral muscle spasm	65	100.0	19	29.1
Space tenderness	64	98.0	18	27.5
Sciatic tenderness	62	95.0	7	10.7
Scoliosis	11	16.8	1	1.5
Straight leg-raising	65	100.0	13	19.9
Reflex changes	46	70.4	36	55.1
Sensory disturbances	26	39.8	22	33.7
Atrophy	9	13.8	9	13.8

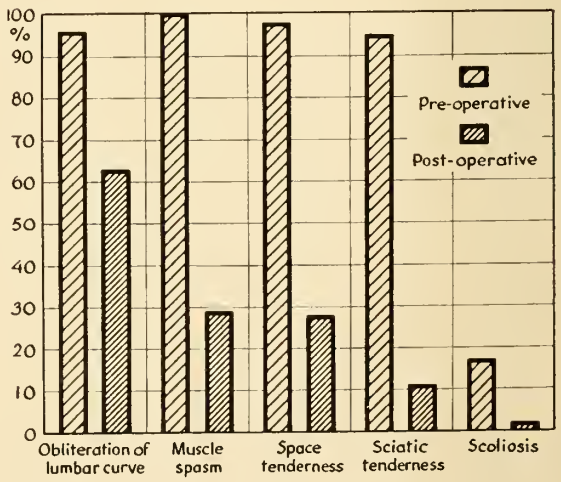


Fig. 9. Change in physical signs of herniated intervertebral disc following operation.

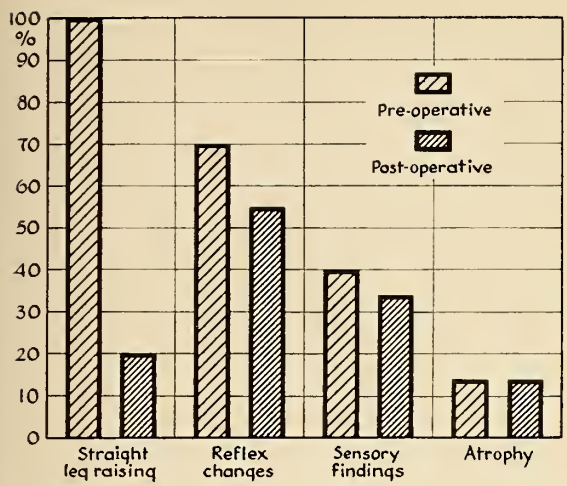


Fig. 10. Change in physical signs of herniated intervertebral disc following operation.

Analysis

In evaluating the results of operation, we classified the patients into three groups: relieved improved, and not improved. The case was considered relieved if the patient had complete relief from pain both in the back and leg, and could resume former activities; improved, if there was less pain and discomfort than before the operation and if the sciatic syndrome was alleviated, and light work could be done; not improved, if there was no improvement over the pre-operative status.

Backache, which was present in every case before operation, was completely obviated in approximately 70 per cent of the cases and relieved to a great extent in an additional 20 per cent.

The sciatic syndrome, or evidence of root irritation, present in 96 per cent of cases before operation, was present in 27.5 per cent of cases after the operation. Similarly, the aggravation of pain with coughing and sneezing that was present in 88.7 per cent of cases before operation was still present in only 23 per cent at follow-up examinations.

The lumbar curve was restored in twenty-two cases (34 per cent). Muscle spasm was relieved in forty-six cases (71 per cent), which is approximately the same number that were relieved of the symptoms of root pain. Space tenderness was also eliminated in forty-six cases (71 per cent). Sciatic tenderness was eliminated in fifty-five cases (86 per cent). Scoliosis was eliminated in ten cases (99 per cent) of those having it. Straight leg raising was restored to normal in forty-two patients (65 per cent). Reflex changes were normal in nineteen cases before operation and in twenty-nine cases after operation, but this net gain is made up of return of ankle jerk in seventeen cases and loss of ankle jerk in seven cases. The loss of ankle jerk, as a result of operation, is apparently due to manipulation of rootlets in removal of the discs, with residual damage to the rootlets. Sensory disturbances are altered but little by the surgical procedure; they were improved in four cases (6.2 per cent), indicating that damage due to compression of the rootlets is, in many instances, irreversible. Atrophy was unaltered by surgery.

Conclusions

A review and analysis of sixty-five cases of herniated disc is presented. Analysis of post-operative follow-up reveals that complete relief is obtained in approximately two-thirds of the patients, with improvement in an additional 16 per cent.

These figures include all cases of herniated disc operated in the neurosurgical division of this clinic prior to August, 1942, and include some earlier cases in which it would now seem probable that a disc was not found because neurotic conditions simulated the presence of a disc. With added experience we now believe we would recognize these neurotic conditions.

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Discussion

Dr. G. R. Dunn: I am sure we all wish to thank Dr. Peyton for his most thorough and comprehensive paper on intervertebral discs. Dr. Peyton has certainly presented his findings and results on this group of cases in a very impersonal manner.

I think the number of cases with minor back complaints following disc operations has been something of a disappointment to all of us. Marked improvement is certainly the rule but a great many of the patients do have complaints of minor discomfort in the back following the operative procedure.

Dandy, in a recent article in the October number of *Annals of Surgery,* emphasizes the importance of the two component parts of the disc, the prolapsed part causing the sciatica and the central necrotic portion causing the backache.

I am inclined to think that in our treatment of these cases, we have not paid enough attention to the thorough removal of the central necrotic portion of the disc, and more careful attention to this feature may eliminate some of the minor complaints which the patients have exhibited postoperatively.

Dr. R. F. McGandy: I was very much impressed by Dr. Peyton's explanation of some of the recurrences seen in disc operations. I refer particularly to the projection of the annular ligaments. It would seem to me that we will probably have to perform more fusions in disc operation. Dr. Peyton spoke of a wedge type of fusion and I would like to ask if he has arrived at a conclusion as to which type of fusion he feels is best in these cases?

Dr. Roscoe Webb: Herniated, ruptured, protruding lumbar intervertebral discs are spoken of as among the most common lesions coming to surgery at this time. The different titles all suggest trauma and the published reports frequently describe the condition as being definitely due to trauma and as being always due to trauma. The trauma, we are told, may be slight or may be relatively mild. We are also told that the causation, fundamentally, is due to the anatomical variation of the third, fourth and fifth lateral facets of the lumbar vertebræ which turn upward, the maximum being reached at the fifth. I would like to hear the essayist discuss the trauma question.

The nucleus pulposus is confined in the disc under pressure and this pressure has been measured on supine fresh cadavers and found to be thirty pounds. It is also estimated that with the body erect, this pressure would be increased to one hundred pounds and that in certain spinal movements, this pressure would be increased to three hundred pounds. If a normal disc pressure can vary from thirty pounds to three hundred pounds without rupturing, it becomes difficult to understand just how a slight trauma could cause rupture of the disc. In our football players the pressure, no doubt, is sometimes higher than three hundred pounds. Have there been an appreciable number of disc cases among our players at the University Health Service and, if so, has the material removed been only nucleus pulposus, or was there also a portion of the cartilaginous plate found protruding into the spinal canal? In other words, was there a simple rupture of the annulus fibrosus or was there a rupture which included the edge of the cartilage plate?

When we describe the condition as due to trauma are we talking about trauma alone, or are we talking about a slight trauma and a degenerated, diseased disc? In one study of three hundred sixty-eight spines, nodules were found on the dorsal aspects of 15 per cent of the autopsy cases. In a recent paper on discs, Dandy states that concealed discs occur twice as frequently as protruding discs and that in order to cure and prevent recurrences in these cases, he removes a degenerated, necrotic, mushy, brown interior of the disc with a curet. In these concealed discs the posterior longitudinal ligament is spoken of as thinned or thin and yielding. The point which I would like to hear discussed is as to which condition is due to trauma? Does a relatively mild trauma produce the degenerated, necrotic, mushy, brown material, or is this a part of a pre-existing condition in the entire disc which gradually extends to the posterior surface of the disc under the posterior longitudinal ligament, and then as the result of a slight trauma, distends the ligament or breaks through and produces the symptoms?

Saunders and Inman studied the pathology of the intervertebral discs and said, "We should like to emphasize that posterior herniations are in the great majority of instances evidence of general disc degeneration."

Degeneration in the disc is described by Saunders and Inman as coming on in the third decade. Degenerative hematomata are found to be very frequent in supposedly healthy spinal columns in middle life. The nucleus pulposus undergoes a progressive change from decade to decade and cavities with gelantinous fluid and cell débris are found. Later the nucleus becomes an amorphous, mushy mass consisting of cell débris necrosis. The annulus fibrosus shows progressive changes, the fibrous lamellæ become more definite and larger. The inner layers merge with degeneration into the expanding nucleus until a little more than a ring of the original tissue persists; the lamellæ become more swollen. Some areas show necrosis and vascularization commences. Fissures occur in the fibrous bundles. Concentric fissures anteriorly and radial fissures dorsally are described and through these radial fissures nuclear material herniates into the vertebral canal.

It seems that we should clarify this question of trauma. Do the numerous small traumas of daily life produce this degenrated necrotic condition in the discs of the more mobile three lumbar vertebræ which are constantly under thirty to three hundred pounds of pressure? Does the common variety of bachache cast suspicion on the condition of one's lower discs? Is the protrusion of a portion of a disc into the spinal canal and against a nerve root simply a part of the disease process which may occur during a period of increase in the pressure within the disc and thus account for the factor of trauma?

Dr. Ralph T. Knight: Dr. Peyton spoke of pressure exerted by coughing and sneezing, et cetera and said it was due to venous engorgement. I have given an anesthetic on several occasions in this type of case and one time I let the patient strain while the surgeon was searching for the disc. It had probably receded and the straining brought it out. On a number of occasions since that time, various surgeons have asked me to let the patient strain in order to bring the disc out. I would like to ask Dr. Peyton if he considers it possible to really force out the disc by a strain of this kind, and whether this might be a helpful routine procedure whenever the herniation is difficult to locate?

Dr. J. H. Moe: I really have very little to offer in addition to Dr. Peyton's excellent presentation of this subject.

Our operations run very similar to those that Dr. Peyton presented. We have been getting in a follow-up period of a year approximately 70 per cent of good results. Now just what does constitute a good result is open to question. Occasionally (once a month or so) we get a letter from somebody who had a good

result and no longer has. That leads us to believe that we have not been doing enough fusions. We have watched the gradual narrowing of the interspace on x-ray and undoubtedly this, with our re-operative findings, shows that the annulus fibrosis promotes a factor in bulging and it might in connection with scar tissue produce further symptoms.

The number of cases that fuse is going to be a good deal higher. We fused approximately 10 per cent of the fifty or sixty cases we have done. We are now going to run that proportion beyond 50 per cent, and it remains to be seen whether there will be an improvement or not. I think there will.

The type of graft that Dr. White explained is the one we use. As the patient is allowed to sink down over the kidney rest, this graft fits in so snugly that it tends to make the spinous processes come apart a little bit.

Dr. Wm. T. Peyton, closing discussion: In the first place, Dr. McGandy's question about the type of fusion has been quite well answered. I agree that this is the best type of fusion done at the present time. I should perhaps explain the type of graft for some of you who are not familiar with it.

An H-shaped graft is cut from the tibia with the crossbar of the H wide enough to wedge apart the spinous processes which are to be fused. Notches are then cut in the spinous processes and the graft is laid in so that when the spine is slightly flexed the graft is wedged between the spinous processes, and it is firmly held there by the notches cut in the processes. To be safe, one has to prolong the stay of the patient in the hospital. One would hesitate to let the patient up in less than a month. It might be safe to do it sooner. There is some hesitancy to routinely fuse the spine after removal of herniated disc lesions, but I am convinced that we should do fusions on more of these people than we have been doing. We have not fused many up to date. I have not seen any recurrence in patients we have fused.

Another type of fusion used by some surgeons, but so far as I know not yet published, consists of taking out more of the cartilagenous plate than we ordinarily take out. One must have special instruments in order to gouge this intervertebral space out completely. Then the space is filled in with bone chips. I hesitate to use it because it seems possible that the bone chips might slip out of place or fail to unite, and I think the graft we use is better and more safe.

The answer to Dr. Webb's question about trauma becomes very involved if trauma is to be discussed completely. I said that early in life the disc had a blood supply and was more pulpy or liquid and as age went on there were changes in the disc, and Dr. Webb described these age changes in more detail. These changes probably do make the disc more subject to herniation. It is a fact that these lesions practically never occur before twenty years of age and never in children. So far as I know, although there have been these reports on the pathological disc which Dr. Webb reviewed, the question has never really been settled as to whether an entirely normal disc can be ruptured due to minor trauma, or whether the disc must be pathological before it does rupture.

The thirty pounds mentioned by Dr. Webb, I think, was in connection with the weight necessary to reduce a disc to its original thickness after it was removed from the body. It is true that one has more weight than that on the disc in life when the spine supports the upper body and any weight lifted. On the other hand, many of these histories of trauma describe the attack as having followed unusual motions, such as Dr. McPheeters said were productive of attacks, especially twisting motions. Thus there are other factors in addition to compression. One must remember that if these lesions do not occur in athletes, they have been trained to protect themselves with their muscles, et cetera. There is, therefore, more protection of trained athlete's vertebral discs. Not all disc herniations are due to trauma. I had a patient who developed this type of pain when she awoke after sleeping on a soft mattress.

I cannot answer you, Dr. Webb, as to whether these discs are degenerated when they herniate or not. I think probably they are not all normal discs when they herniate, but I have no proof of this.

When you talk about concealed discs, it is all a mystery to me. I do not know what a concealed disc is. I know how they have been described and what they are supposed to be according to description, but I have never recognized one. I am sure that if I have operated on such a disc, I have recorded it as a negative exploration. There may be such a thing as a concealed disc, but I am not convinced that there is.

Dr. Webb also asks if all backaches are due to discs. The answer is no, but backache may be the precursor of a disc herniation for a long time with no other symptoms. I have never operated on a patient who had backache only without sciatic radiations of pain. I think it would be a very difficult diagnosis to make if there was no sciatic nerve radiation of pain.

Dr. Knight asked about changes in position of the spine being effective in bringing the disc out. I do not doubt that certain motions of the spine may bring some herniated discs out into the spinal canal, and I wonder if such a receded disc was not present in the patient in whom Dr. Peterson showed a very characteristic defect in the spinogram, but at operation no disc lesion was found. I believe it is possible to overlook a disc lesion because it is receded at the time of operation. We have manipulated our operating table in an effort to bring a herniated disc out, but I have not yet been able to bring one out in this manner.

Dr. Von Wagonen said that in the army it was his custom to have these people with indefinite signs of disc lesions given a forced march and returning they go directly to the x-ray laboratory for spinogram. If they were then negative, it is quite certain that there is no herniation. However, we cannot force people to march in civil life.

I think Dr. Barr has always been more in favor of spinal fusion than has customarily been done in this part of the country.

Conservative treatment has been discussed. I thoroughly agree that all of these people should be conservatively treated when they first develop symptoms. Many patients will improve to such an extent with rest that no operation is later necessary. I would not as a rule operate on a patient who was not incapacitated.

Dr. White spoke of the mobility of the spinous processes. I have tested for this mobility of the spinal processes, and I think probably when a large part of the disc is involved or is diseased, there may be a greater mobility, but in cases where I have tried it, I could not convince myself that there was increased mobility.

The military forces are right in not accepting those men who have had operations for herniated disc lesions. At the present time, in spite of the results which we report, I do not think the Federal Government should accept them for insurance and guarantee them life support if they should become permanently disabled. In the first place, many of these people who would go back to comfortable civil life would not continue to do any disagreeable task assigned them in military service, and back pain would become a very convenient excuse to get out of disagreeable work. I think for officers, who are not forced to do menial jobs, that it might be possible to operate on them and have them continue in the military forces, especially if combined with spinal fusion. We have had the experience of the Navy accepting a medical officer who had an operation without a fusion. I think the Army should continue to object to having surgical treatment of disc lesions in the field of operations, and they should eliminate those with disc lesions as far as possible in the pre-induction stage.

TORSION OF THE UTERUS

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TORSION of the uterus is not uncommon in veterinary practice, but in women it is so rare that most textbooks are silent on the subject. It practically always occurs in a pregnant uterus or in the presence of some type of pelvic tumor. The first case recorded was by Virchow in 1863. In his case the condition was discovered at post-mortem examination. The great majority of cases of torsion of the uterus have been in non-pregnant women, the subjects of fibroids or ovarian cysts. In fact, the relation between torsion and tumors is so close that some observers have thought torsion to be impossible in the absence of some type of pelvic tumor. Feiner of Brooklyn states that the normal uterus, pregnant or not, is rotated around its long axis from right to left so that the transverse diameter is not parallel to the transverse diameter of the pelvis. This physiologic torsion is very slight in the uterus of normal size and shape, but becomes more pronounced and more easily recognizable in the pregnant uterus, although it never exceeds more than a few degrees. The uterus of normal size and shape cannot turn on its long axis beyond the physiologic degree, but the tumorous or pregnant uterus can become twisted to a degree beyond normal motility. Kustner believes that an abnormal torsion of the uterus is not uncommon early in pregnancy, and that as the uterus increases in size, the torsion either rights itself or causes abortion.

The various writers on the subject are fairly well agreed on the etiological factors.

The predisposing causes most favored are pelvic tumors, adhesions, laxity of the supporting ligaments and abdominal wall, and a soft, thin-walled lower uterine segment. It is felt that a large asymmetrical uterine fibroid is very commonly a predisposing factor. The most favored activating factor is a sudden twist or turn of the body, such as suddenly turning over in bed. It is also felt that certain occupations or duties may be the exciting cause. The twisting motion of sweeping or scrubbing a floor or operating a hand scythe, all of which require a swinging motion of the body, are felt by many authors to be immediate etiological factors. Robinson and Duvall of England feel that the bladder may at times contribute to the cause by its fascial relation with the vagina, cervix and lower uterine segment. The amount of contact between them depends upon the degree of distention, and reaches its maximum when the bladder is full. A completely full bladder stiffens the lower part of the birth canal and acts as a kind of splint to the uterine pedicle. The empty bladder splints the vagina only and thus offers a fixed point around which the uterus may twist. It is felt that during pregnancy, when a woman arises during the night to empty a full bladder, torsion may occur during the act of rolling over when she gets back into bed after the splinting of the full bladder has been removed.

The initial symptoms are due to injury to the structures in the pedicle which sets up secondary changes in the affected area and later leads to involvement of the surrounding organs. The structures affected are the cervix, ganglia and nerves, uterus, broad ligaments, bladder and rectum. These structures are peculiarly susceptible to shock when subjected to mechanical trauma such as is bound to occur when twisting takes place. Occasionally torsion seems to take place slowly and in such cases there is a gradual development of the final symptoms. Hanly of Los Angeles reported a case of 180 degrees rotation at full term with no symptoms. The rotation was discovered at cesarean section for transverse position. The usual symptoms are the sudden onset of severe, acute, generalized abdominal pain accompanied by nausea or vomiting and soon followed by the development of shock to a greater or lesser degree. These symptoms may or may not be accompanied by diarrhea. Walker of England reported the case of a woman thirty years of age who had moderate, fairly continuous pain down the front of both thighs for several months. Her menstrual periods continued to be regular and normal. Suddenly the pains became very much more severe and extended to the front of the abdomen. The pain was so severe that she was unable to extend her thighs and could walk only

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with difficulty. The next day her temperature was 101 and her pulse was 100. The lower abdomen did not move on respiration and was rigid and tender. A diagnosis of torsion of an ovarian cyst was made, but at operation the uterus was found to be rotated 120 degrees to the right and to contain an interstitial fibroid four and one-half inches in diameter.

There is no single characteristic symptom on which to base a diagnosis. Robinson and Duvall believe that the diagnosis of primary torsion of the pregnant uterus has never been made before operation. They reviewed twenty-eight reported cases and found the following diagnoses had been made: seven, ectopic pregnancy; five, torsion of a pelvic tumor; four, obstructed labor; three, peritoneal crises; three, retroflexion of pregnant uterus; three, pregnancy in a closed horn of a double uterus; two, torsion of hydronephrosis; and in one no diagnosis was made pre-operatively. They feel, however, that if one is aware of the clinical manifestation of torsion he should be able to recognize it. Success in diagnosis depends on careful consideration of the history and symptoms, and physical examination of the uterus, vagina, bladder and rectum. If, during pregnancy, there is a history of acute symptoms which resemble those of perforation of the bowel, extrauterine pregnancy, or concealed accidental hemorrhage, torsion of the uterus should be suspected. Examination of the uterus may reveal a small tender lump marking the site of the engorged Fallopian tube. By examination under anesthesia it may be possible to feel the thin isthmus of tissue which marks the site of the twisting. Examination through a speculum may show the presence of spiral folds in the vaginal mucosa, especially if the twisting is in the region of the vagino-cervical junction. The passage of a uterine sound may be helpful. If no atresia is demonstrated, torsion is probably not present. Inability to pass a sound is supportive but not conclusive evidence of torsion, since there may be other causes of such inability such as the sound lodging in a fold of mucous membrane or against a part of the fetus. Vaginal bleeding is extremely rare in the presence of torsion, but is usually present in concealed accidental hemorrhage. Cystoscopic and proctoscopic examinations may show distortion of the bladder and rectum. Mistaking torsion of the uterus for ectopic pregnancy, ovarian torsion, or rotation of the pedicle of a tumor, is of no great importance, since all of these conditions should be treated surgically; but making a diagnosis of concealed accidental hemorrhage in the presence of torsion and treating the case conservatively may be fatal.

In considering treatment it is found that some writers claim to have reduced uterine torsion by manipulation. Most authors, however, agree that such procedure should be reserved for mild cases in early pregnancy in which the general condition of the patient is so good that a reasonable delay cannot prejudice the chance of recovery. In frank torsion, with the usual severe symptoms, nothing short of operation at the earliest possible moment should be considered. Operation should not even be delayed for temporary anti-shock measures, since the initial shock soon merges into progressive collapse as the vascular and nervous damage becomes more pronounced. At operation it may seem advisable simply to reduce the torsion if all tissues are in apparently normal condition and there is no pelvic abnormality which makes recurrence probable. If circulation to any of the parts has been long obstructed it is necessary to remove all devitalized tissue. If operation is performed early the postoperative course is usually uneventful.

The case which suggested a review of this subject was that of a woman thirty-one years of age. In early childhood she had mild attacks of measles, mumps and whooping cough. At twelve years of age she had pneumonia with no complications. Aside from these conditions her past medical history was entirely negative. Her menstrual periods began at fifteen years of age and were fairly regular and normal at thirty-day periods with moderate pain during the first day. She had two children, one was four years and eight months of age, and the other was seventeen months old. She had had no other pregnancies. Her last period was on January 15, 1929. Early in pregnancy she had no nausea or vomiting. About a month after becoming pregnant she began to have an almost constant dull ache in the right lower quadrant of her abdomen with a sensation of numbness throughout the entire right lower extremity. No cause for this condition was discovered, and she stated that she had had the same condition with her two former pregnancies. On the morning of June 15, 1929, she awakened with a headache which gradually became more severe throughout the day. Aside from the headache she felt normally well. Her head still ached when she went to bed at 8:00 P. M. She slept soundly from 8:00 P. M. until about midnight when she was suddenly awakened by a severe constant pain throughout her entire abdomen. She stated that the pain was so severe she could not sit up or move about in bed. She stated, in fact, that the pain was so severe

she screamed enough to attract the attention of her neighbors. She called an ambulance and was taken to a hospital at about 2:00 A. M. on the morning of June 16. I was out of town at the time, and she was seen by another physician. During the day of June 16 her pain was controlled by hypodermic injections of quarter grain tablets of morphine. I returned late in the evening of that day and was informed by the physician who had been seeing her that she was in the hospital and should be seen because she probably had a severe attack of appendicitis. When I first saw her at about midnight of June 16 her temperature was 100 and her pulse was weak at 120 per minute. She complained of constant severe pain throughout her abdomen and was extremely tender throughout the lower half. Her appearance was that of one who was extremely ill. Her urine was normal, and her bowels had moved during the day. I was unable to arrive at a definite diagnosis. I felt, however, that she certainly had some acute abdominal condition which required investigation. Through a midline incision between the umbilicus and the symphysis, the uterus was exposed and was found to be bluish in color. Further exploration revealed a moderate amount of clear fluid in the abdomen and showed that the uterus had rotated to the right through 180 degrees. The left Fallopian tube and broad ligament were stretched across the posterior surface of the uterus which was directed anteriorly. The uterus was tense, but there was a suggestion of loss in normal consistency. It was rotated back into normal position and continuous hot wet packs applied for a time, but since there was no change in its appearance a supravaginal hysterectomy was done. No other pelvic abnormality was found. The raw surfaces were covered and the abdomen closed in the usual manner. Later examination showed no interstitial fibroid and no abnormality in the shape or structure of the uterus. Although she was quite ill, her postoperative course was uneventful, and she left the hospital on July 4. I visited her on January 7, 1944, and she assured me that she has been well ever since recovery from that operation.

Summary

Torsion of the uterus is extremely rare. It almost never occurs except in the presence of some pelvic abnormality.

The main probable causative factors are pelvic tumor, cystic ovary, adhesions, changes in the splinting effect of the bladder, and sudden twisting motions of the body.

The usual symptoms are the sudden onset of severe, acute, generalized abdominal pain with nausea or vomiting and the rather rapid development of symptoms of shock.

Diagnosis is best made by a careful consideration of the history and examination of the uterus, vagina, bladder and rectum.

In the usual case the only treatment is surgical intervention at the earliest possible moment. The prognosis is good if treatment is not delayed.

TRAUMATIC RUPTURE OF THE INTESTINE

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SUDDEN trauma to the abdominal wall may cause grave havoc within the abdominal cavity without visible external sign of injury. A man so injured by blunt trauma may, after the first shock of the blow has subsided, return to his work but only when nausea or vomiting appears or abdominal pain recurs does he suspect he may be severely injured. This ability to carry on may mislead the physician when the patient reports for consultation and may result in delay which often contributes to a bad prognosis.

On the other hand, well defined serious and readily recognized injuries to the intestine will bring the patient to the surgeon's attention much earlier. Under such circumstances the prognosis is better depending on successful repair. The prognosis is definitely better too, because infection has had less time to establish itself within the peritoneum.

In the case of crushing injuries, intestinal rupture may be masked by the occurence of bone fractures, external lacerations, contusions, dislocations or other demonstrable injuries occurring at the time of the accident. Shock may be present due to these latter causes alone and intestinal injury may thus escape attention until a considerable period of time has elapsed.

Automobile accidents involving intoxicated riders furnish other instances in which intestinal injury may escape attention, especially when injuries about the head can be demonstrated or when the patient is not fully conscious and cooperative.

From the case records in our Duluth hospitals,

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reports are here given of three cases in illustration of some of the points mentioned above.

Case 1—A short stocky man, aged sixty-two, was standing working at a machine, when suddenly a flying piece of board from the machine struck him in the abdomen. He felt pain at once, stopped work and stood around for a while. He even went out and had a drink of liquor. He then returned to work but became progressively faint and he noticed he was in a cold sweat. He also had pain in the right lower abdomen. He then came to Dr. S. N. Litman for examination. He was found to be pale, clammy, perspiring freely, was doubled up and grunting and he complained of severe pain in the right side of his abdomen. His pulse was rapid and thready. His respirations were shallow and grunting. Blood pressure registered 150/90. His abdomen was rigid throughout and there was considerable difficulty in localizing any particular spot of tenderness. He was admitted to the hospital and given heat and morphine for pain. The white count was 10,000. Three hours later it was down to 9,200. His hemoglobin reading was above 90%. The red count remained above 4,500,000. The abdomen began to be distended. On the fourth day he began to vomit fecal matter. On this day the white count was 15,000. At this time he was seen in consultation. Until then he had steadfastly refused any suggestion of surgical operation. Immediate operation was recommended and was done. Incision through the right lower rectus region revealed liquid feces which poured out of the wound at once. Search in that region revealed a loop of ileum containing a round hole less than a centimeter in diameter. From this hole liquid feces were pouring out. Instead of closing this hole a No. 18 catheter, as an enterosotomy tube, was inserted through it for a distance of six or seven inches and the intestinal wall was closed around the catheter. The wall of the gut and the catheter were then brought up to the lower angle of the wound and anchored to the parietal peritoneum with one or two absorbable sutures and the catheter led out of the abdominal incision. No omentum was within easy reach. Five grams of sulfathiazole powder were distributed in the contaminated area within the peritoneum and the abdominal wound was closed leaving some of the sulfathiazole powder in the layers of the wound. No drains were left in the peritoneum. The patient was still vomiting fecal material and a nasal decompression tube was therefore maintained for the drainage of the upper gastro-intestinal tract. Parenteral fluids to the extent of 3,000 to 4,000 c.c. daily were administered subcutaneously and intravenously. On the first day following operation he was given sodium sulfathiazole intravenously. In addition to this, sulfathiazole in 15 grain doses suspended in normal saline solution was given with a syringe at intervals through the enterostomy tube each day. Salt solution was administered in this manner at intervals. Lactose too, in salt solution, was given through the tube from time to time. The sulfa-blood-level was checked daily. The highest postoperative temperature was 101.2 degrees. After a few days the fecal material draining from the nasal decompression tube cleared. Mineral oil was given through the enterostomy tube. Enemas began to be effective and his stools became loose and copious. The decompression tube was removed on the sixth day and from then on he took food and relished it. The abdomen became soft and flattened out. The enterostomy tube was removed on the tenth postoperative day, and the patient's condition then rapidly improved. He recovered, left the hospital on the twenty-fifth postoperative day and returned to his work a few weeks later. A ventral hernia in the operative wound is now his sole complaint.

Case 2—The second case was of a crushing injury occurring in a boy aged nineteen. While standing at the rear of a grocery truck he was caught between this truck and a car which crashed it from behind. He was admitted to the hospital on the service of Dr. F. H. Magney. The patient was in severe shock on admission and died within a few hours after injury. There were bruises on the left arm and over the left iliac crest and a four-inch fracture of the left iliac crest. The autopsy report described a tear of the jejunum one and one half inches in length and about six inches below the duodenum. There was beginning generalized peritonitis.

Case 3—The third case occurred in a farmer, aged fifty-eight, who, while in an intoxicated condition and while riding in an automobile, was injured. The car rolled over and he was thrown around within the car. He complained of abdominal pain and multiple bruises and abrasions about the head and extremities. He was catheterized by his attending physician, Dr. R. H. Puumula, and the urinalysis was essentially negative. X-rays of the pelvis and the back showed no fractures. His general condition was fairly good and he was allowed to go home but told to report back the next day. The next day he returned and complained of intense abdominal pain particularly in the left lower quadrant. He had by this time developed nausea and vomiting. The vomitus consisted of foul-smelling material. He was admitted to the hospital at once, where he was seen in consultation by Dr. C. H. Mead. Operation was done at once. On opening the peritoneal cavity free fluid was present. Cultures and smears were taken. Diffuse peritonitis was visible on the parietal and visceral peritoneum with a considerable amount of fibrinous exudate present over the loops of the small bowel. A jagged laceration was found in one loop of the small bowel on the mesenteric side. Liquid fecal material was exuding from this opening. A catheter was placed in the traumatic defect and the bowel closed around the catheter. The latter was then brought out through the lower end of the operative wound. Five grams of sulfanilamide crystals were left in the contaminated area. A small Penrose drain was led from deep in the pelvis out through the lower end of the operative wound. The wound was then

closed around the enterostomy tube and the drain. The patient recovered promptly and left the hospital on the twelfth postoperative day.

Comment—The small intestine is more exposed to trauma than the rest of the gastrointestinal tract and the ileum is most often ruptured. The jejunum comes next in frequency. The colon, even though it crosses the vertebral column, is seldom mentioned as subject to traumatic rupture. The duodenum, if it is injured, suffers in its third portion. Bursting, crushing or tearing injuries are commonly mentioned and are the results of blunt blows on the abdomen, falls, automobile wrecks, kicks in the abdomen, (which has occurred in football games), and muscle strain. As an instance of the latter, Berman and Roser report the case of rupture of the jejunum about three feet from the ligament of Treitz. This occurred in a man of fifty-five years with the past history of having had a laparotomy. Later he was carrying a heavy stone when the intestinal rupture occurred. There was no blow on the abdomen. At operation the peritoneal cavity was filled with intestinal contents, some still issuing from the jejunal opening. The patient recovered from the operation.

Kirby and Needle report the unusual case of a man aged fifty-nine who had recurrence of a right inguinal hernia which had been treated surgically twenty-five years before. On one occasion he was engaged in reducing his hernia when he felt pain. This increased in intensity and he was admitted to the hospital. At operation a ragged tear was found in the ileum and intestinal contents poured out from the opening. The opening was closed, the hernia repaired and the patient recovered.

The mortality in cases of ruptured intestine is not always so favorable as the foregoing statements would seem to indicate. Poer and Woliver reported three cases of their own, one of which was obviously involved intestinal rupture, which was diagnosed early. Operation was done promptly and the patient recovered. In the other two patients delay allowed the development of peritonitis to occur and both died. These authors made a very careful study of the subject and collected thirty-six cases from which they developed some interesting points. There was a mortality of 70 per cent in one group of seventeen patients in which delay was a factor in handling. In fourteen cases, constituting another group which were treated promptly, the mortality was only 35 per cent. In the group of cases with severe multiple injuries, however, the mortality was 100 per cent. Four patients had multiple intestinal perforations and three of these died.

Estes (WL) found in 2,217 consecutive accident cases of all types that thirty-two represented abdominal trauma—an incidence of 1.4 per cent. Cody reported an incidence of 0.9 per cent in a total of 5,744 accident cases.

Summary

While the incidence of intestinal rupture is comparatively small, unrecognized rupture increases the seriousness with each day—with each hour, in fact. Fortunately the modern use of sulfonamids in conjunction with operation tends to offset some of that seriousness. These patients, however, cannot go unoperated with impunity. Fortunately, too, the ileum and the jejunum are most commonly the sites of injury. The bacterial content in the fecal leakage from these sites is less at the onset of rupture than it would be in colon rupture. Patients with abdominal trauma should be studied with extreme care, observed closely and explored early rather than late.

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WAR DECLINE IN BIRTH RATE HAS STARTED IN U. S.

The war's effect on the nation's birth rate has now reached the point where a decline has set in. The decline will continue for the duration and at least one year after, statisticians of the Metropolitan Life Insurance Company predict.

For the current year they expect births to be 15 per cent below last year's number.

The peak of the wartime spurt in the birth rate came in the winter of 1942-43 when births in 11 large cities of the nation were averaging between 1,100 and 1,200 a day. Since September, 1943, however, births have been less than in the corresponding month of the previous year and by December, 1943, they had fallen 22 per cent below the unusual peak of December, 1942. —*Science News Letter*, March 18, 1944.

DESMOID TUMOR

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A DESMOID tumor is a benign growth arising from musculo-aponeurotic structures. As such, it comes under the more general term of fibroma, but it presents one distinguishing feature in that it contains striated muscle. According to MacCarty[2] it is a fibrocytoma in striated muscle. Desmoids occur most commonly in the rectus muscles of the anterior abdominal wall but may develop in any of the striated muscles or their aponeuroses.

This tumor is a distinct entity but is comparatively rare. In 1904 Pfeiffer[4] collected 400 cases in the literature. Gurlt[1] of Vienna reported eight desmoids in a series of 16,637 tumors. To date there have been 99 cases of desmoid tumor seen at the Mayo Clinic since 1908.

The present conception of the cause of these tumors is that they are secondary to muscular rupture. Possibly an inflammatory reaction develops in a small hematoma causing fibrosis and hyperplasia. Muscular rupture resulting from violent labor contractions is considered to be a frequent cause of this tumor. Approximately 90 per cent of the cases reported were in women and approximately 90 per cent of these women had borne children. In other cases a history of trauma is often elicited and these tumors also do occur not uncommonly in operative scars.

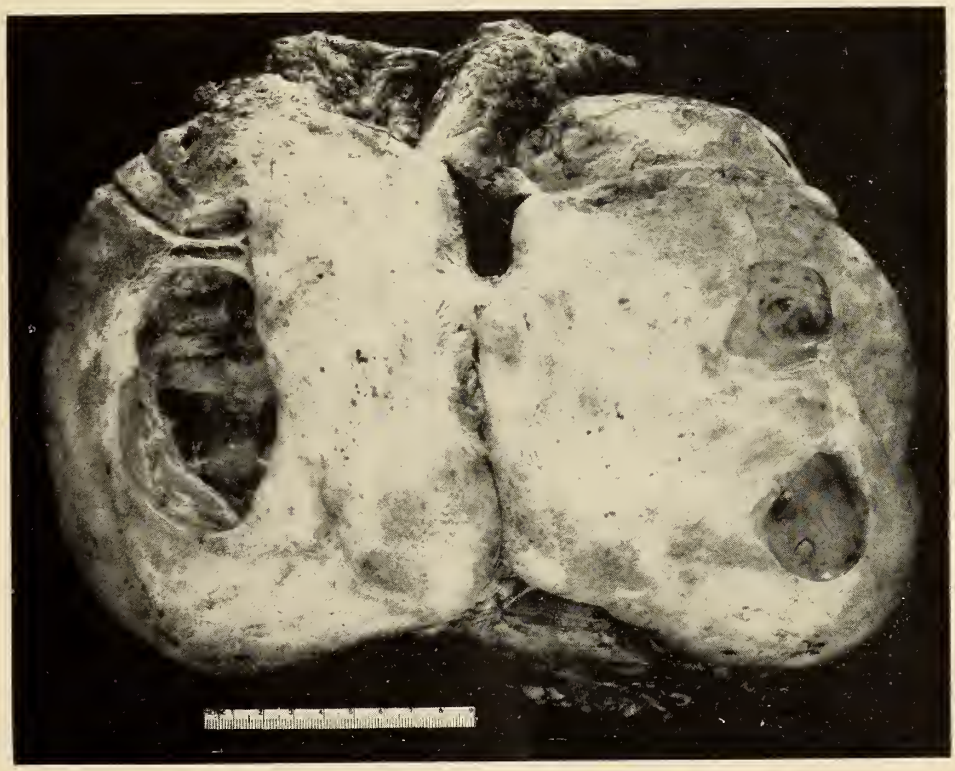


Fig. 1. The desmoid tumor bisected after removal.

Grossly the tumor is hard and fibrous and resembles a fibroid of the uterus. Microscopically it is a very cellular fibroma containing striated muscle. Because it is a slow-growing type of neoplasm, it seldom attains a size greater than 8 to 10 cm. in diameter. Rokitansky[6] in 1880 reported one weighing 17 kg. which is by far

From the Mayo Foundation (Judd, Fellow in Surgery) and the Division of Surgery (Masson), the Mayo Clinic, Rochester, Minnesota. Read at the annual meeting of the Southern Minnesota Medical Association, Austin, Minnesota, August 23, 1943.

the largest on record. Although it is an infiltrating type of growth without a definite capsule, it is a benign tumor. No cases have been reported in which the tumor has metastasized. Local recurrence is common, however, and in excising the tumor great care must be exercised to get all the tumor tissue.

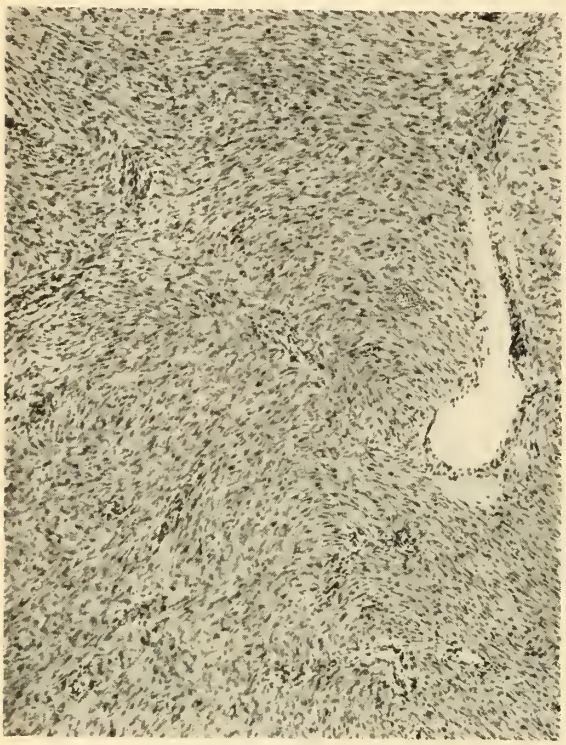


Fig. 2. Microscopic section of the desmoid tumor.

The case we wish to report is that of a twenty-eight-year-old white woman. She had given birth to a normal child previous to her present illness. Otherwise the past history was not significant. She became pregnant in September, 1942. She was followed by her local physician and her prenatal examinations all were negative until February 6, 1943, at which time a small mass was noted just above the symphysis pubis and to the right of the midline. The mass increased rapidly in size as the pregnancy advanced and it was felt that it would interfere with a normal delivery. Therefore on May 28, 1943, about a week before her expected term, the patient underwent a cesarean section. At this time the tumor extended from the symphysis to an inch below the umbilicus and considerably past the midline. An attempt to obtain a specimen for biopsy was unsuccessful because of profuse bleeding. It was determined, however, that the mass was in the abdominal wall and did not involve the peritoneal cavity.

The patient was admitted to the Mayo Clinic on July 6, 1943, with this history. Examination was essentially negative except for a large mass in the right lower quadrant of the abdomen and extending past the midline. The mass extended from the symphysis pubis to two inches above the umbilicus and measured 20 by 12 centimeters. It was firm and smooth, but not tender. It pushed down into the pelvic inlet so that the pelvic structures could not be identified on bimanual examination.

On July 13, 1943, this tumor was explored by one of us (J. C. M.). It was found to arise from the right rectus muscle but it was difficult to determine whether it involved the left rectus. The tumor was adherent to the pubic bone near the insertion of the right rectus muscle and extended to above the umbilicus. All the tumor was removed. A small hole was made in the peritoneum through which the appendix was removed and a ventral fixation of the uterus performed to prevent its prolapsing into the cul-de-sac. The wound was closed leaving five grams of sulfathiazole in the peritoneal cavity. Fortunately, the tumor had shelled out from beneath the anterior sheath of the right rectus muscle so that closure of the abdominal wall was accomplished without undue tension. Convalescence was uneventful and the patient was allowed to return home on the twenty-first postoperative day.

The tumor measured 18 centimeters in diameter and weighed 2,550 grams. The pathologist reported it to be a rather active degenerating cystic desmoid tumor. This is the largest tumor of this type seen at the Mayo Clinic. The rapid growth evidenced in this case is an unusual feature for this type of tumor.

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THE PRESENT STATUS OF INTRAVENOUS AND RETROGRADE PYELOGRAPHY

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IT is now over ten years since the first attempts to visualize the urinary tract by the intravenous injection of a shadow-producing substance were made. At this time Von Lichtenberg, Benz, Swich and other coworkers announced a preparation which they named uroselectan which could be given intravenously without injury to the vein, without serious reaction and which in most cases produced a satisfactory x-ray shadow in the urinary tract sufficient for the diagnosis of various renal and ureteral conditions. They showed that this iodide formula, uroselectan, entailed little risk.

Sodium iodide was first tried in massive doses. Braasch, among others, attempted to obtain films by this method but found them unsatisfactory, the shadow generally being faint and indistinct and the patient frequently suffering from reactions and general discomfort.

Finally, by using an organic form of iodide, a solution was perfected in which a moderate amount of the drug could be used without serious reactions and productive of satisfactory x-ray pictures. Quite naturally the medical profession welcomed this added aid in diagnosis and recognized its simplication of the x-ray study of the kidneys. Further improvement in the drug itself and better technique increased its efficiency and the enthusiasm from the procedure. It opened a considerably larger field for study of the urinary tract even to the point of applying the method as a measure of renal function.

The contribution of intravenous pyelography as an aid in diagnosis cannot be over-emphasized and no group in the profession realized it more than the urologists themselves. An index to its popularity is reflected in the fact that last year in St. Luke's and St. Mary's hospitals in Duluth there were performed 232 such tests in comparison to seventy-six retrograde procedures.

Like so many new drugs, new aids in diagnosis, new instruments and tests, the method has been the cause of many sins of commission and omission. To rely on this method, to advise, treat, or institute surgical procedures, without obtaining satisfactory or complete findings, detracts from the examiner, the test itself, and certainly is unfair to the patient. It is beyond my comprehension, how at times, some of us will accept a very poor and entirely unsatisfactory intravenous pyelogram and will proceed with some major treatment when, if the method had been the retrograde, one would have considered the film as entirely worthless.

At a recent visit in the East and at a well known urological center, above all places, this glaring mistake was witnessed by me. The patient was to have a uretero-intestinal implantation, and when the ureter was exposed it was found to be dilated as large as one's thumb. The wound was closed and the patient returned to his room with a six- to eight-inch incision and nothing else. This formidable operation was decided upon from an intravenous pyelogram which was only partially visible but was concluded to be of normal caliber. Unfortunately, too often complete reliance is placed on this type of urography and results in a wrong diagnosis of urinary pathology or, what is equally as important, the patient is given a clean bill of health when some serious condition exists.

It is the opinion of many who have become interested in this subject and have had considerable experience, that one of its greatest contributions is its ability to uncover many pathological conditions which might otherwise go unnoticed or be discovered at too late a time. The ease of the intravenous method prompts the examiner to resort to its use.

Indications for Intravenous Urography

1. The examination of children and the aged.
2. Study of the ureter after bowel implantation.
3. Study of the ureter and kidney in carcinoma of the bladder which prevents ureteral catheterization.
4. Conditions which mechanically prevent the insertion of the cystoscope, such as strictures of the urethra, bladder neck obstruction, et cetera.

Presented at the Northern Minnesota Medical Association, Duluth, Minnesota, August, 1943.

5. To determine the integrity of the ureters after certain abdominal operations, such as hysterectomies.

6. As a test for renal function.

7. In severe accidents in which there is the possibility of renal, ureteral, or bladder damage.

8. For bladder x-ray studies after the drug has accumulated in sufficient amount to outline this organ.

9. In pregnancy, where excretory urography finds a limited use. However, the visualization of the lower third of the ureter is rarely satisfactory and the danger to the fetus from multiple x-ray exposures should be kept in mind.

Contraindications

1. Marked renal insufficiency (uremia or impending uremia).
2. Marked cardiovascular diseases, such as
   (a) coronary disease.
   (b) advanced myocarditis.
   (c) decompensation.
3. Marked impaired hepatic function.
4. Active tuberculosis.
5. Hyperthyroidism.
6. Iodine idiosyncrasy.
7. Hyperpyrexia.

Indications for Retrograde Urography

1. When disease of the bladder is suspected, such as stones, growths, diverticulæ, anomalies, etc.

2. Necessity for determination of kidney function.

3. Separate collection of urine from kidneys for microscopical study.

4. Contraindications for intravenous pyelography such as iodine idiosyncrasy, hyperthyroidism, etc.

5. When pelvic lavage, dilatation of ureters or kidney drainage via ureteral catheters is necessary.

Contraindications

1. Conditions in which serious trauma or infections might result.

2. Children and the aged.

3. When it is desired to determine merely the existence of a kidney or its relation to other organs.

4. In check-up following various types of operations such as hysterectomy, ureter-intestinal implantation, etc.

Mild reactions such as a feeling of warmth, dryness of the throat and mouth and flushing are not uncommon following intravenous injection. More serious reactions may follow such as choking, palpitation, syncope, nausea, vomiting, tachycardia, pain at site of injection, acute renal pain, urticaria with swelling of the tongue, lips or eyes. Patients in whom a reaction might be suspected, may be tested by putting a few c.c. of the drug on the tongue. Another method for testing for allergy is the injection of .05 c.c. intradermally. If a wheal larger than 15 mm. results, a severe general reaction may be expected if the drug is used.

Goldburgh and Baugh, about a year ago, reported a fatality after administering the drug. This is the ninth reported in the American literature and no doubt others have occurred. Practically all deaths were quite sudden and their cause ascribed to an extreme idiosyncrasy to the dye. However, sometime ago, Mayo reported over 2500 injections without a death.

We, of course, are aware that the retrograde is not without its dangers and sometimes painful reactions follow in spite of very careful technique. Bladders have been ruptured both intra- and extraperitoneally and complete rupture of the kidney has been reported. A not uncommon accident is an extravasation into the parenchyma of the organ and the danger of the dissemination of possibly infectious material if present. Ureters have been punctured during their catheterization and trauma inflicted in their walls.

Considerable attention has been directed to the possibility of adapting the behavior of the drug as a test for renal function and undoubtedly a simple reliable test will be devised. Some of the early research work was done by two Italians. Their investigation was centered upon two phases of its activity in the kidney and ureter: (1) the intensity of the pyelo-ureteral image; and (2) the time of appearance and disappearance of the shadow. As to the first, they found that the density of the shadow depends too much on the amount of urine which happens to be mixed with the dye at the time the x-ray was taken. The second finding depended upon the variable motility of the kidney, ureter and bladder which too greatly influenced the disappearance of the dye.

On renal physiology will depend to a great degree the development of these drugs as a test of kidney function. Much new knowledge, especially

regarding the glomeruli and tubules, is assisting in making the drug adaptable as a measure of the functions of the kidneys.

Research workers such as Richards, Marshall, Smith, Shannon, Van Slyke and others have found that the cell lining of the tubules has a highly selective action in reabsorbing material from glomerular filtrates and excreting waste substances. They have found that:

1. Water is filtered by the kidney glomeruli and reabsorbed in part in the tubules.
2. Inulin is filtered by the glomeruli only.
3. Glucose is filtered by the glomeruli and entirely reabsorbed in the tubules.
4. Diadrast is filtered by the glomeruli and excreted in the tubules.
5. Urea is filtered by the glomeruli and partially reabsorbed by the tubules.
6. Skiodan is filtered by the glomeruli.
7. Hippuran, neo Iopan, etc., are handled similar to Diadrast.

Drury states that the new kidney function tests have all made use of a very general principle or law which applies to a great number of substances excreted by the kidneys. This law for any given individual, is that the amount of a substance excreted is directly proportional to the concentration of that substance in the blood during the period of excretion.

The term "clearance test" means the determination of the amount of a certain drug excreted by the kidneys in a certain period of time.

The urea clearance test is the one most generally used as a standard in experiments with various substances.

Braasch and his associates have made similar studies along this line and feel that it has considerable value. More recently, Findley, Edwards and others believe their recent experiments make the application of the clearance test practical and fairly reliable and recommend it as such.

Briefly, this method is to give the dye, as in the usual intravenous pyelogram, and collect all urine secreted in the next thirty minutes and determine the amount of iodine appearing in the urine under standard conditions. According to them, normal subjects excrete approximately 45 per cent of the injected dose during this thirty-minute period, and reductions in the rate of iodine excretion, are roughly proportional to variations in the urea clearance. This test has the added feature, that it may be done in conjunction with the usual routine intravenous method.

The interpretation of the films is quite confusing at times and considerable experience is often necessary to arrive at a correct diagnosis. We should remember that the retrograde method is purely a mechanical procedure, a simple filling of the renal pelvic space under very slight pressure, while the intravenous administration involves a strictly physiological process. Normally the kidney and ureter pass regularly through two stages of activity, systole and diastole and the pictures may be distorted depending on just which phase was taken.

As intravenous urogram depends upon the secretory function of the renal tissues, the most satisfactory films generally are those of normal or nearly normal kidneys. The most pathological kidneys are least liable to be visualized and the results disappointing. Strangely enough, occasionally no shadow will be seen in what proves to be a normal kidney and sometimes the dye does not appear until long after the usual final thirty-minute x-ray. Such a result might well lead to the diagnosis of a "dead kidney."

One very important lesson we have gained from our experience with this newer procedure is that, having in mind that the intravenous technique gives us the best pictures in normal kidneys —kidneys which are able to secrete and function to their full physiological capacity—then in direct proportion to the lack of proper visualization, should the probability of pathology be measured. This feature heretofore has not been given the emphasis it deserves.

There is a strong tendency when an intravenous film is not satisfactory, to blame the outcome on improper technique, improper preparation, et cetera, when, as a matter of fact, we have an abnormal condition, which is impossible, as yet, to demonstrate by this method. We should not allow ourselves to minimize its good features on account of an occasional disappointing one.

That there is considerable disagreement as to the best technique is well known. Opinions vary as to suprapubic pressure, bladder or rectal bulb inflation, cathartics, enemas and amount of fluid intake, prior to the x-ray exposure. The importance of the size of the dose is too often, I believe, not given enough attention. To give only one ampule to all patients will sometimes bring poor results. In other words, the amount given

should be measured by the weight of the patient. Poor pictures in large or obese patients may be due solely to this error. Nichols, of Cleveland, claims counter-pressure is not necessary and states some of his best pictures have been in patients without any special preparation.

So, then, when our intravenous study does not produce the necessary information or none at all, we should insist that the condition present is pathological until we have satisfactory evidence that it is otherwise. I believe that if we insist upon making this a hard and fast rule, we will avoid many of the pitfalls and mistaken diagnoses and eventually discover the true condition.

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◆ CASE REPORT ◆

MASKED MASTOIDITIS

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THE onset of acute mastoiditis without any clinical evidence of a previous infection of the middle ear is not a common occurrence, although a review of the literature in English reveals many reports on this condition.

In 1923, Hempstead[1] reported three cases of mastoiditis in which there was no apparent involvement of the middle ear. He said that this infection arises by direct extension from the nasopharynx to the eustachian tube, middle ear, and thence through the aditus ad antrum to the mastoid cells. This passage is sealed off and does not permit drainage of the mastoid cells. Sufficient drainage from the middle ear may occur through the eustachian tube. There may not be any signs or symptoms of involvement of the middle ear and the tympanic membrane may appear normal at the time of examination.

Frequently, this entity is referred to as a "primary mastoiditis," and attempts are made to explain that the infection is carried to the mastoid cells by the blood stream.

In 1925, Kopetzky and Almour[2] reported three cases of acute mastoiditis in which a subperiosteal abscess had developed. In all three cases the tympanic membrane appeared normal at all stages of the disease.

In 1927, Smith[5] reported four cases of this unusual type of mastoiditis and stressed the fact that this disease originates by direct extension from the eustachian tube and tympanic cavity.

Mackenzie[3] reported a case of "latent mastoiditis" in which pain on the involved side of the head was the only symptom. There was no history of otorrhea and the tympanic membrane appeared normal.

In 1932, Williams[6] reviewed 585 cases of acute and subacute mastoiditis in which operation was performed at the Mayo Clinic. In forty-one, or 7 per cent, of these cases the disease was classed as masked mastoiditis.

Pastore and Hempstead[4] reported a case of hemorrhagic mastoiditis without apparent involvement of the middle ear in which the only symptom was pain. There was no history of otorrhea or of a recent infection of the upper part of the respiratory tract.

Report of Case

A girl, aged four and one-half years, was brought to the Mayo Clinic on October 22, 1942. During the previous two weeks, she had had a cold in the head. For four days before she was brought to the clinic, her temperature had ranged from 100° to 101° F. and during this time she had had pain in the right ear and a slightly sore throat. A pediatrician had observed some redness and dullness of the tympanic membrane and some tenderness over the mastoid region of the right side. Heat had been applied and sulfathiazole had been administered.

When the patient was examined at the clinic, the eardrum appeared normal. There was mild congestion and edema over the mastoid region on the right side and the edema extended down into the anterior cervical region. Pronounced tenderness was present over the mastoid and cervical regions on the right side. The nasal mucous membrane was congested and mucopurulent discharge was present bilaterally. The tonsils were moderately enlarged. The results of general physical examination were essentially negative. The value for the hemoglobin was 8.9 gm. per 100 c.c. of blood. The erythrocyte count was 3,720,000 and the leukocyte count was 8,600. A differential blood count revealed 79 per cent neutrophils, 17 per cent lymphocytes and 4 per cent monocytes. Roentgenograms which were made when the patient was brought to the clinic revealed diffuse cloudiness of the mastoid cells on the right side. Local application of heat and administration of

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CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

J. B. Arey, M.D., Pathologist

Presentation of a Case

DR. EICHHORN: The case is that of a fifty-seven-year-old white man who was admitted to the Contagion Service of Minneapolis General Hospital on February 11, 1944, in a comatose condition. The history at that time was obtained from informants.

Three weeks prior to admission he developed chills, fever, cough associated with bloody sputum and pain in the chest. He was seen by a physician who advised bed rest and prescribed some type of medication (possibly one of the sulfonamides). After about three days of treatment he felt considerably better and again started to be up and about. After being up for four to five days there was a recurrence of symptoms, i. e., pain in the chest, cough and fever, so he returned to bed. This latter episode occurred on January 30, about eleven days prior to admission. He was now seen by another physician who made a diagnosis of lobar pneumonia. This was confirmed by x-ray examination. He was given some type of lamp treatment for a period of three days, and again symptomatic improvement was noted.

The day prior to admission the patient was quite disoriented and complained of considerable illness. The following morning he was found lying in bed in a comatose condition, and was brought to the hospital. Physical examination on admission to the hospital revealed a restless, comatose white man showing signs of considerable dehydration. His temperature was 102.8, pulse 112 and respirations 24. Examination of the eyes and ears showed no abnormalities. The neck was rigid on anterior flexion and Kernig's sign was positive. The right knee jerk was slightly more active than the left. On examination of the chest there was dullness to percussion, bronchial breath sounds and moist rales over the anterior upper portion of the right lung. The left lung and both bases were clear. The heart appeared to be shifted to the right, was normal in size, the rhythm was regular and there was a soft blowing systolic murmur at the apex. The remainder of the physical examination was essentially negative. The clinical impression was meningitis of unknown etiology and right upper lobar pneumonia.

Laboratory examination on admission revealed a hemoglobin of 72 per cent, white blood count 12,000 with 81 per cent neutrophiles. The serology was negative and the urinalysis showed nothing of note. The cerebrospinal fluid was cloudy and contained 6,350 cells per cu. mm. with 96 per cent neutrophiles. Smears of the fluid showed no organisms. Since no organisms were found, a presumptive diagnosis of meningococcic meningitis was made and intravenous sodium sulfadiazene was started. He was also given 150,000 units of meningococcic antitoxin, fluids and supportive therapy. The following day the blood and spinal fluid cultures revealed a type 19 pneumococcus, so the patient was transferred to the Medical Service.

Treatment while on the Medical Service consisted of sulfadiazene, 2 grams every four hours, parenteral fluids and sufficient sodium bicarbonate to alkalinize the urine. Penicillin was started on March 12, 1944, 50,000 units being given intravenously at once, followed by 100,000 units during the remainder of the day, the latter in divided doses given both intramuscularly and by lumbar and cisternal puncture.

With treatment the patient's temperature gradually fell to normal in a period of nine days. There was marked improvement in his clinical condition and mental status by the fifth day. By the seventh hospital day he was completely oriented. Penicillin was given for a period of ten days, a total of 1,000,000 units being administered. The blood sulfadiazene level was maintained between 15 and 20 mg. per cent after the fifth hospital day. By the second hospital day the spinal fluid cell count had fallen to 2330 cells per cu. mm. with 88 per cent neutrophiles. On February 13, 1944, the count was only 91 cells, with 10 per cent neutrophiles and 90 per cent mononuclears. The cell count subsequently varied between 40 and 300 from February 15, 1944, to February 19, 1944, following which it ranged between 45 and 55. Spinal fluid culture was positive for type 19 pneumococcus on February 12; subsequently all cultures were negative. Blood culture on February 25 was negative.

By February 29 the patient seemed well on the road to complete recovery and was able to sit up occasionally, his strength progressively increasing. However, on March 5, 1944, he suddenly complained of dyspnea and orthopnea. Physical examination at this time revealed the findings in the chest to be identical with those on admission, i.e., consolidation of the right upper lobe and no findings on the left. At this time, however, there was rather loud diastolic murmur in the aortic area. The blood pressure was now 140/40 and there was a definite Corrigan and capillary pulse. The venous pressure was 11. There were no signs of edema and the liver was not palpable.

In spite of digitalis, restricted fluids and a salt-free diet, the patient continued to have paroxysmal attacks of dyspnea and orthopnea. Because of these attacks, oxygen was started about the third day.

On March 8, 1944, numerous high-pitched rales were audible in the left chest anteriorly. The temperature rose to 100.8 on this date, having been practically normal since February 20, 1944. Blood culture on March 10 was negative and the white count was within normal limits. On this date type 19 pneumococci were found in the sputum. Sulfadiazene therapy was again instituted, but his attacks of dyspnea persisted and he died rather suddenly on March 11, 1944. Postmortem blood culture and spinal fluid cultures were contaminated, the spinal fluid contained 69 cells per cu. mm. with 12 per cent neutrophiles.

DR. AREY: Did the patient have any pain with the attacks of dyspnea?

DR. EICHHORN: He complained of a little epigastric pain, but this was never a prominent feature. The outstanding features were the paroxysmal nature of the dyspnea and the orthopnea.

DR. AREY: In summary, this case is that of a man with pneumococcic meningitis, apparently cured by chemotherapy and penicillin, who suddenly developed a high pulse pressure, a diastolic murmur in the aortic area and paroxysmal attacks of dyspnea. At times these latter were associated with considerable anxiety.

Dr. Stenstrom: This is a film taken on admission February 11, 1944. There is a density in the right upper lobe evidently due to a pneumonic process. The heart and mediastinum are displaced to the right, due in part to rotation. No changes are noted in the left lung. The heart does not appear enlarged. Here is another film taken on March 4, 1944. There are now some signs of resolution of the pneumonic process in the right upper lobe. In addition, there is a rather soft, homogeneous density extending outward from the root of the left lung into the parenchyma. Although an early pulmonary edema might be considered with this picture, I would prefer to consider it as a pneumonic process in the left upper lobe.

Autopsy

Dr. Taylor: The pertinent findings at postmortem examination were largely limited to the chest. Each pleural cavity contained 2200 c.c. of clear amber fluid. The heart weighed 475 grams. Both ventricles were hypertrophied and dilated; the right auricle was dilated. Except for the aortic valve, the valvular and mural endocardium showed nothing of note. Covering the entire ventricular surface of the right aortic cusp and extending upward beyond its free edge, was a soft, brownish-red friable vegetation 2x1x1 cm. Upon pressure, this vegetation was easily moved into such a position as to occlude the orifice of the right coronary artery. At the lateral part of the attachment of the base of this cusp was a large tear approximately 10x5 mm. completely separating the cusp from its base of attachment at this point. The left aortic cusp was slightly thickened near its central portion, the free edge did not appear significantly thickened. Near the central portion of this cusp was a circular tear approximately 5 mm. in diameter, immediately below the corpus Arantii. The posterior aortic cusp was definitely thickened and showed small areas of calcification. The coronary arteries showed no significant change.

The right lung weighed 1020 grams, the left 1270. The right upper lobe was completely consolidated and had a slightly fibrous consistence, suggesting organization of the pneumonia. The posterior aspect of the right lower lobe had a similar appearance. The remainder of the right lung showed moderate edema. In the central portion of the left upper lobe was a firm area from which no purulent material could be expressed. The remainder of the left lung showed moderately severe edema, the fluid having a faint brownish appearance.

The spleen weighed 510 grams, was congested and moderately firm. The liver weighed 2400 grams and on section showed definite darkening of the centers of the lobules. Permission for examination of the head was not granted. However, a segment of the spinal cord removed between the tenth and twelfth thoracic vertebrae by the anterior approach showed no apparent change. No infarcts were visible in any organs.

Microscopic Examination

Dr. Arey: Here is a section from the central portion of the left upper lobe. As you remember, this area grossly showed edema and increased consistence. Here we have definite pulmonary edema and a number of heart failure cells. In addition, a number of alveoli contain plugs of fibrin indicative of a pneumonic process. Large amounts of fibrin are quite characteristic of a lobar pneumonia and do not, as a rule, appear with a bronchopneumonia.

This section of the right upper lobe shows large amounts of fibrin in the alveoli, with considerable organization. This is therefore an unresolved, organizing pneumonia. Persistent plugs of fibrin have been replaced by an ingrowth of fibrous tissue and capillaries, this process being known as organization. Such a process is seen with lobar pneumonia rather than bronchopneumonia because of the large amounts of fibrin in the former.

This section of liver shows a rather marked chronic passive congestion. There is marked atrophy of the liver cords in the centers of the lobules, associated with marked congestion of these areas.

Here is a section of the vegetation on the right aortic cusp. Notice that it is made up of a platelet thrombus in which are a number of nests of blue staining material. Some of the latter represent groups of bacteria and some represent accumulations of calcium. Unfortunately, the culture taken from this vegetation was contaminated, but the assumption is that it is pneumococcic in origin. Although we have no section of the valve proper, the vegetation is definitely superimposed on an old aortic valvulitis, as evidenced by the thickened cusps. This section of the spinal cord shows no evidence of disease.

The final diagnoses on this case are pneumococcic meningitis, acute aortic bacterial endocarditis on an old valvulitis, rupture of aortic cusp, cardiac hypertrophy and dilation, bilateral hydrothorax, chronic passive congestion of lungs and liver, pulmonary edema, unresolved right upper lobar pneumonia, and left upper lobe pneumonia. The pneumococcic meningitis has apparently been cured clinically; the aortic endocarditis, however, is probably of pneumococcic origin. Intermittent closure of the right coronary orifice by the aortic vegetation may have contributed to his attacks of dyspnea and heart failure.

Discussion

The meningitides may be divided into the suppurative and the nonsuppurative forms. The signs and symptoms of all the types of meningitis are sufficiently similar and well known so as to not warrant repetition at this time. It might be pointed out, however, that the symptoms of the various types of nonsuppurative meningitis are, as a rule, less violent than those of the suppurative types.

Meningococcic meningitis is the most common type of suppurative meningitis. In a review of 372 cases of purulent meningitis at the St. Louis Children's Hospital, Huntington and Wilkes-Weiss found that 43 per cent were of the meningococcic type. The disease is apparently spread by droplet infection from infected to normal individuals. The organisms multiply on the mucosa of the nasopharynx and subsequently invade the blood stream. Although the blood stream usually becomes sterile and meningitis develops within a short time, a number of cases of fatal meningococcic bacteriemia without involvement of the meninges have been reported. In over 50 per cent of early cases, a positive blood culture can be obtained.

The mortality in untreated cases of meningococcic meningitis varied considerably in different epidemics, ranging from 20 to 90 per cent. With the use of sulfonamides, however, the mortality rate and incidence of sequelae has been very markedly reduced.

Streptococcic meningitis was second in incidence in the series of Huntington and Wilkes-Weiss, comprising 20 per cent of the cases. It is usually secondary to otitis media, sore throat or sinusitis. Although the mortality was formerly very high, it also has been markedly reduced by the use of chemotherapy.

Pneumococcic meningitis comprised 16 per cent of Huntington and Wilkes-Weiss' cases. According to Hollander, most of these cases occur in children. It is most frequently secondary to some type of otorhinologic condition (34.8 per cent), but may occur as

a primary infection of the meninges (22.3 per cent) or secondary to a penumonic process (16.9 per cent).

The reported prognosis in cases of pneumococcic meningitis varies greatly with different authors. Prior to the advent of chemotherapy, the mortality was between 95 and 100 per cent. Now recovery rates ranging anywhere from 20 to 65 per cent are reported, with an average around 45 per cent. The prognosis apparently depends upon a number of factors. It is said to be favorable if the cerebrospinal fluid is sterilized within four days. Hodes, Smith and Ickes noted a recovery rate of 22 per cent in patients under two years of age, and 64 per cent in patients over two years. Hollander states that the prognosis in the younger age groups is improved by the use of combined drug-serum therapy. He also advises the use of both serum and chemotherapy in cases of type III and V pneumococci, and in cases secondary to pneumonia or otorhinologic conditions. Except in cases of types III and V pneumococci, he attaches no prognostic significance to the type of invading organism. The majority of authors agree that the prognosis is better in cases of primary pneumococcic meningitis than in those cases secondary to pneumonia or otitis media. Hodes, Smith and Ickes now advise against too early drainage of surgical foci in cases of secondary pneumococcic meningitis.

Influenzal meningitis comprised 14 per cent of Huntington and Wilkes-Weiss' series. It is due to the Pfeiffer bacillus, and apparently has no relation to influenza. The majority of the cases occur in individuals under two years of age, only 127 of 500 cases collected from the literature being in persons over two years. Huntington and Wilkes-Weiss found a preceding or concomitant otitis media or pneumonia to be significantly more common in cases of influenzal meningitis than in a similar group with meningococcic meningitis. In ten of forty-two cases they noted an otitis media or pneumonia preceding the influenzal meningitis, but were unable to determine the exact relation between these infections.

The mortality rate in cases of influenzal meningitis is extremely high, being especially high in children under two years. Of Huntington and Wilkes-Weiss' fifty-four cases there were three recoveries, two in patients over two years. In the larger series of 500 cases, there were thirty-five recoveries, twenty-six of these being in patients over two years.

Staphylococcic meningitis makes up 5 per cent of the cases of purulent meningitis. It usually develops from furuncles, abscesses, etc., and often spreads from a brain abscess. According to Michels and Gonne, only eight recoveries had been reported up to June, 1938. They reported an additional case with recovery. It is hoped that penicillin will be of distinct value in the treatment of such cases.

Barrett, Rammelkamp and Worcester collected 108 cases of meningitis caused by the colon bacillus. Although such cases may occur at any age, they are most common under three months. Barron in 1918, reviewing meningitis in infants and newborns, found E. Coli to be the responsible organism in 33 per cent of cases in infants under three months. Farber states that E. Coli is the most frequent cause of meningitis in infants under one month. On the contrary, Fothergill and Sweet state that meningitis in the newborn is due to streptococcus hemolyticus, pneumococcus or the colon bacillus, and believe the latter is the least common.

Cases of meningitis in children and infants due to the colon bacillus may present difficult diagnostic problems, the signs of meningitis occasionally being absent or appearing just before death. In a few cases the presenting symptom may be hydrocephalus.

The mortality in cases of meningitis due to the colon bacillus is given by Barrett and his associates as 78 per cent, with only 14 per cent complete recoveries. They advise the use of chemotherapy, repeated lumbar punctures and whole blood transfusions as the teatment of choice.

Fractures of the skull may give rise to a suppurative meningitis, the infection probably entering from the sinuses or middle ears.

Gonococcic meningitis must be distinguished from meningococcic meningitis.

Pyocyaneous meningitis usually occurs following surgery on the genito-urinary tract.

Of the nonsuppurative forms of meningitis, that due to the tubercle bacillus is best known. Tuberculous meningitis is said to be the most common type of meningitis except during epidemics of the meningococcic type. It is seen most frequently in childhood, and is always secondary to an active tuberculous focus. Often a predominance of polymorphonuclear leukocytes is found in the cerebrospinal fluid. The mortality is almost 100 per cent.

Rich and McCordock have shown that in cases of tuberculous meningitis there are small caseous tubercles near the surface of the brain substance or in the meninges. These foci are older than the meningeal inflammation, and apparently discharge large numbers of organisms with the resultant meningitis.

Lymphocytic choriomeningitis is a relatively benign form of meningitis, with very few fatalities. Clinically, it is associated with headaches, nuchal rigidity, vomiting, fever and an increased spinal fluid pressure. The cell count is usually not high, and nearly all the cells are lymphocytes. However, in a case reported by Viets and Warren, the spinal fluid cell count rose to 4,000, and the presence of paralysis suggested anterior poliomyelitis. Paralysis was also noted in a case reported by MacCallum and Findlay. Viets and Warren have reported a fatal case in which postmortem examination revealed an encephalitis as well as a meningitis.

A virus has been isolated from the cerebrospinal fluid of some, but not all, cases of lymphocytic choriomeningitis. Apparently not all cases belong to the virus group thus far identified.

The meninges are regularly involved in cases of meningo-vascular syphilis. In some cases there is an acute onset with symptoms similar to those of a severe meningitis.

Torula meningitis may be confused with tuberculous meningitis or brain tumor.

Tumors which metastasize to the meninges may produce symptoms of meningitis (carcinomatous meningitis).

Dr. Burklund, would you say something concerning the treatment of the various types of meningitis?

Dr. Burklund: When meningitis patients come to us on contagion, we first do a spinal tap in order to confirm the diagnosis and to determine the responsible organisms. The majority of our cases are meningococcic. We have had about 125 cases since the first of last year, with ten to fifteen deaths. Most of the deaths have been in alcoholics or patients very severely ill on arrival.

Once a diagnosis of meningococcic meningitis is established, we use one of two forms of treatment. In the case of very ill patients, or patients in either extreme of life we use combined therapy, consisting of both meningococcic antitoxin and one of the sulfonamides, usually sulfadiazene. We start the treatment of such patients by giving 100,000 units of meningococcic antitoxin intravenously, diluted up to double its volume with normal saline. To this solution is added ¼ c.c. of 1:1000 adrenalin. The patient is also given 5 grams sodium sulfadiazene intravenously and 5 grams subcutaneously. The former is run in in a period of several hours, the latter over a period of twelve to eighteen hours. In this way, blood sulfa-levels of 15 to 20 mgs. per cent can be reached in about twelve hours. We attempt to maintain such a level throughout the period of treatment. If the patient is not comatose and is able to take sulfadiazene by mouth, we start with 5 grams orally and give 2 grams every four hours. We always alkalinize the urine and attempt to maintain an adequate fluid intake and output.

In patients not severely ill or not in the extremes of life, we use only sulfonamides for the first twenty-four hours. If no improvement has ensued at the end of that time, however, we also use meningococcic antitoxin in these cases.

Pneumococcic meningitis is treated in essentially the same manner, but type specific anti-pneumococcic serum is always used if possible. On the last two cases, penicillin has been used.

In cases of influenzal meningitis, treatment is started with sodium sulfadiazene as a continuous intravenous drip, 1/10 gram per kilogram of body weight diluted in saline or Ringer's solution. In addition, anti Type B influenzal rabbit serum is given intravenously diluted with 200 to 300 c.c. of saline. The amount of serum administered is determined by the spinal fluid sugar. With spinal fluid sugars of 15 mgs. per cent or less, 100 mgs. of antibody nitrogen of influenzal serum are given. With a spinal fluid sugar of 15 to 25 mgs. per cent, 75 mgs. of antibody nitrogen are given. With a sugar of 25 to 40 mgs. per cent, 50 mgs. of antibody nitrogen are given, and with sugars above 40 mgs. per cent, 25 mgs. of antibody nitrogen are used. Sulfadiazene therapy is maintained until the patient has run a normal temperature for at least two weeks, or until about ten days after a sterile spinal tap.

Dr. Stoesser: I believe it is important to distinguish between recovery from the acute stage of meningitis and prolonged recovery. Thus, some patients are carried through the acute stage of the disease, only to suffer later from a number of complications. This is especially true in cases of influenzal meningitis, in which multiple abscesses are often discovered following recovery from the acute period of meningitis.

This danger is also distinctly present in cases of pneumococcic meningitis, in which recovery from the acute stage may be followed by a re-elevation of temperature and signs of abscesses. It is less often seen in cases of streptococcic meningitis, and now rarely seen in cases of meningococcic meningitis, although prior to chemotherapy the incidence of complications in these cases was high. Thus meningococcic meningitis, the most prevalent of the meningitides, now offers the best prognosis.

Dr. Sher: Some people advise administering large doses of sulfonamide during the first four to five days, maintaining a blood level of 40 to 50 mgs. during this period. In other words, they attempt to kill all the organisms right away rather than use small doses over a period of time.

Dr. Stoesser: The tendency now seems to be to give large doses of sulfonamides early.

Summary

A case of pneumococcic meningitis complicated by acute aortic bacterial endocarditis is reported. The latter was superimposed on an old aortic valvulitis and resulted in rupture of an aortic cusp. The various types of meningitis, their therapy and prognoses are discussed.

Final diagnoses: (1) Pneumococcic meningitis; (2) acute aortic bacterial endocarditis; (3) old aortic valvulitis; (4) rupture of aortic cusp; (5) cardiac hypertrophy and dilation; (6) unresolved right upper lobar pneumonia; (7) left upper lobe pneumonia; (8) pulmonary edema; (9) bilateral hydrothorax; (10) chronic passive congestion of lungs and liver.

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PEDIATRIC-PATHOLOGICAL CONFERENCE

DULUTH PEDIATRIC SOCIETY
O. W. Rowe, President

ST. LUKE'S HOSPITAL
Arthur H. Wells, Pathologist

Congenital Fibrocystic Disease of Pancreas

C. O. Kohlbry, M.D. and Arthur H. Wells, M.D.

Dr. C. O. Kohlbry: This thirteen-month-old male infant was admitted to the hospital almost two months before his death with a history of cough and slight fever of ten days' duration. Peculiarly large, pale, foul stools had been noticed for the last four months and probably from the time of birth. An older sister also had had unusually light bulky stools. She died of "virus pneumonia" the day before hospitalization of this child.

On admission he was severely emaciated, weighing 7,500 grams. The buttocks were shriveled and subcutaneous fat was missing. He had a fever of 101° with sticky moist rales heard throughout both lung fields, and there was a decided expiratory grunt. The cough was paroxysmal in type, greatly resembling that of pertussis. An x-ray examination of the chest was interpreted by Dr. A. L. Abraham as bilateral bronchopneumonia on the first examination. Subsequent pictures revealed very little as compared to the abundance of physical findings in the lungs at all times. The heart appeared unusually small. The child's temperature ran from 99.8° to 104° during the first forty-eight hours. During this time the white cell count was 16,600 and 22,100 with a moderate increase in the percentage of neutrophiles. The hemoglobin was 12.5 grams, the red cell count was 4,820,000 and the urine analysis was essentially normal. During his two months of hospitalization there were six periods of exacerbation and remission. This recurrence of fever reaching 102° to 104° and with exacerbation of other symptoms became more frequent and more severe as the disease advanced. Sulfonamid therapy with satisfactory blood levels of the drug was instituted for three periods. It appeared to be of some value but it was not deemed advisable to continue its use over too long periods of time. The child failed to gain weight and tended to follow a slow downhill course. Repeated cultures of the sputum revealed many organisms with streptococcus viridans predominating. Throughout much of the time the white count stayed in the immediate vicinity of 10,000 and there was a normal differential count. The hemoglobin and red cell counts were constantly in normal range. Intradermal 0.1 mg. tuberculin test was negative. Blood cholesterol was 157 mgs. There was profuse perspiration much of the time after admission. The severe coughing seizures resulted in decided cyanosis of a transitory type. The stools were constantly huge, sometimes greasy and offensive. There were large numbers of fat droplets present. Repeated attempts at isolating and finding tubercle bacilli in the stool and sputum were unsuccessful. There was no definite diarrhea at any time. No gram-negative bacillary pathogens were isolated from several stool cultures. The child was in such poor condition that further studies of pancreatic function were not attempted.

His diet was at first of low fat content. Later he was put on whole milk with Karo, orange juice, cereals, vegetables, eggs, bananas, beef and so forth. He took his feedings quite well. He was given plenty of vitamins including percomorph liver oil, 8 drops twice daily, carotene 10 drops, twice a day, B complex by mouth, vitamin B intramuscularly alternating with crude liver extract for over a month and finally 1 c.c. of Endo vitamin A intramsucularly in dosage of 50,000 units in each of two injections. The blood sulfadiazine and sulfamerazine levels were kept between 5 and 14 mgs. per cent for several weeks. Glucose in saline and Hartmann's solution were given subcutaneously as often as once daily for long periods of time. Three blood transfusions of 110 to 150 c.c. were given and injections of 20 to 40 c.c. of intravenous plasma were given on five successive days late in the course of the disease. Four small doses of x-ray therapy over the lungs amounting to 50 roentgen units each, appeared to cause some flare-up after the last treatment.

He gradually became weaker, his fever and coughing spells were more severe and during the last week he developed edema about the face, hands and feet. None of the therapy had any very important effect upon the course of the disease.

Autopsy Findings

Dr. A. H. Wells: The thirteen-month-old white male infant measured 74 cm. long and weighed 6,010 grams. There was practically no subcutaneous fat. A distinct mild edema was visible about the eyes, hands, and feet. Omental, retroperitoneal and mesenteric tissues were edematous but there was no free fluid in the abdominal or peritoneal cavities. The principal finding was a small 10 gram, firm pancreas of normal shape. Sectioning revealed a uniformly compact, firm, fibrous cut surface. Wirsung's duct had a rather thick wall and small lumen but a small probe passed through it freely into the papilla of Vater. There were three thin walled cysts measuring 0.8 cm. in diameter filled with clear watery fluid in the tail of the pancreas. There was no obstruction in the papilla of Vater. The two lungs had about 100 localized scattered small areas

of severe injection with grayish centers. A few of these contained frank pus. The remainder of the lung tissue was well aerated and mildly congested. Air passages had a diffuse injection and contained thick greenish-gray purulent matter. The heart (40 grams), thymus, adrenals and pituitary glands were rather small. No other cicatricial phenomena such as constrictions and cysts in the respiratory, urinary or biliary trācts were found.

Microscopic study: There is a uniformly diffuse severe fibrosis throughout all sections of the pancreas involving intra and interlobular areas equally. Practically all of the small ducts and the majority of the few remaining acini are dilated. The greater the dilatation the flatter is the epithelium. The few remaining acini are quite atrophic and misshapen. The fibrosis is of long standing and shows some hyalinization. There is no inflammatory cell infiltration whatever in any of the sections. There is no foreign matter in the acini or ducts. The duct of Wirsung is not dilated, in fact, its walls are somewhat wavy and irregular. Some of the larger ducts entering it have no dilatation. Islets of Langerhans have but slight change. The lungs have a severe bronchopneumonia with many pus cells in the smaller bronchi and surrounding alveoli. This reaction amounts to small abscess formation on occasions. A great variety of bacteria are found including staphylococci, streptococci, and gram-negative bacilli. No keratinizing metaplasia is found in the epithelium of air passages. However, occasionally the epithelial linings appear unusually thick, including extra cell layers which may be due to vitamin A deficiency.

Dr. N. A. Eidsmoe: What is the difference between fibrocystic disease of the pancreas and celiac disease?

Dr. Kohlbry: Briefly, there is no apparent disease in the pancreas in celiac disease; in fact, the pancreatic enzymes have not been found deficient in this condition whereas in fibrocystic disease the condition is primarily a disease of the pancreas and the lack of pancreatic enzymes is of primary importance. In celiac disease the difficulty is primarily that of absorption of food through the intestinal wall. Factors contributing to this difficulty include an abnormal intestinal motility which does not properly mix and bring the food into proper contact with the intestinal epithelium; there may also be a factor in the ability of the intestinal wall itself to absorb products of digestion. Tropical and nontropical sprue are conditions somewhat similar to celiac disease and it has been found that an extrinsic factor contained in liver may improve these conditions.

Dr. J. H. Neal: What laboratory tests are useful in making the diagnosis of chronic fibrocystic disease of the pancreas?

Dr. Wells: An accurate quantitative analysis of lipase, amylase and sodium bicarbonate excreted into the duodenum following the injection of secretin is by far the best procedure. It has been found that from 30 to 80 per cent of the dried stool is composed of either neutral fat or fatty acids. The proportion of these two depend on the amount of lipase secreted by the stomach and duodenum in the individual case. The amount of neutral fat tends to be greater in pancreatic steatorrhea as compared with celiac disease but the test cannot be depended upon routinely to differentiate the two. The large size of the stools, their odor, gross appearance and the frequently visible droplets of fat are valuable signs particularly when the patient has been followed over a long period of time. One can find large amounts of fat with the sudan III test in the stool and much starch with the iodine test. The blood cholesterol tends to be low; in fact, this is said to be a necessary criterion by some authorities. Vitamin A absorption tests are said to reveal poor absorption. A barium meal by x-ray reveals an abnormal "clumping" of the meal due to a definitely altered peristaltic activity. There is also a therapeutic test in the response to the use of pancreatin, which has been described as of some diagnostic aid.

Dr. Kohlbry: In recapitulation pancreatic steatorrhea or congenital fibrocystic disease of the pancreas is a congenital, often familial fibrosis of the pancreas resulting in serious deficiencies in the excretion of its enzymes into the intestinal tract, thus interfering with the digestion and absorption of food, particularly fats, starches, fat soluble vitamins, especially vitamin A, and to some extent with the absorption of glucose. The child fails to develop properly in spite of the good itake of food. Practically 100 per cent of the patients suffer from recurrent chronic bronchitis or bronchopnemonia. This clinical phase of the picture may completely obscure the difficulty with digestion and absorption of food and thus hide the true nature of the patient's illness. The prognosis is very serious, since the majority die within the first year and most of the remainder are dead within five years. The oldest reported age to be attained was 14.5 years. Treatment consists briefly of a diet high in protein, moderately low in fat and free from starch. It must contain 30 to 50 per cent more calories than calculated for body weight. Pancreatin, vitamin A and other vitamins are important and much time must be spent in control of the respiratory infection.

TRANSPARENT PLASTIC USED TO PRESERVE HUMAN TISSUES

Human tissues, including small organs and embryos, can be preserved in a transparent plastic of the type used to replace glass in airplanes and many more familiar household objects. Details of this new method of preparing permanent, practically unbreakable specimens for study and museum exhibit are reported by Dr. Max M. Strumia and Dr. J. Ivan Hershey, of Bryn Mawr Hospital (*Science,* Feb. 4).

The original size, shape and texture are kept "to a remarkable degree," the scientists state, and the color, though less brilliant than originally, may also be satisfactorily preserved.

The specimen to be preserved is first dehydrated at freezing temperatures and then saturated under vacuum with the liquid acrylic ester (monomeric ethyl methacrylate). Final steps consist in polymerization and, if desired, cutting and polishing the block for a more finished product.—*Science News Letter,* February 12, 1944.

HISTORY OF MEDICINE IN DODGE COUNTY

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(Conclusion)

Dr. James McPeek (1852-1922) was born in Indianapolis, Indiana, on March 5, 1852, the son of Thomas McPeek and Sahara Barto* McPeek.[385] His father was a native of Indiana and his mother was born in Maine of French Huguenot stock. Both came to Olmsted County in Minnesota in about 1855, and settled on a farm near Byron, where Doctor McPeek was reared. The young man attended the public schools of the county, and on December 24, 1875, at Byron, he was married to Miss Ruth Ann Stevens, who died in 1891. After his marriage Doctor McPeek attended the old Keokuk College of Physicians and Surgeons in Iowa, from which he was graduated in 1889. He was licensed to practice medicine in Minnesota at an unknown date,[40] which would indicate that he had been practicing medicine long before he obtained the degree of Doctor of Medicine in 1889, since the licensing law of Minnesota dates from 1883.[95]

Doctor McPeek spent a considerable part of his professional career at Canby, in Yellow Medicine County; but on May 25, 1889, he received a license to practice medicine in South Dakota, and he established a practice at Gary in that state.[72] In September of 1893 he was married to Mrs. Bessie R. Eakins of Gary, and by that time he was living in Canby. He had been living in Saint Charles in Winona County when in September of 1898 he decided to locate in Kasson.[165] He seems to have remained in Kasson for only about a year, for in March of 1899 it was said that he planned to go back to South Dakota.[372] In April of that year he finally moved to Sleepy Eye in Brown County.[386] The Division of Birth and Death Records and Vital Statistics of the Minnesota Department of Health[330] has evidence that Doctor McPeek was health officer of the town of International Falls in 1903, but the writers do not know about this part of his career. In 1906 he was in Gary, South Dakota, again, and in 1912 he was in Breckenridge, Minnesota, where he was local surgeon for a railway company. Toward the end of his life Doctor McPeek lived at Ranier, on Birch Point, Rainy Lake, in Koochiching County, Minnesota.

Doctor McPeek died of erysipelas of the face at the home of his daughter, Mrs. Stephen Trageser, in Minneapolis, on December 24, 1922.[385] He was buried at Byron, Minnesota.

*Originally "Barteau."

Dr. N. Clausen Thimsen (1871-) was born of Steele County pioneers, N. P. Thimsen and Hannah Jensen Thimsen, of Blooming Prairie, on June 28, 1871.[387] He was reared on the farm of his father, who came to what is now Steele County in 1862 and was a well-known veteran of the War of the Rebellion. He was sent to a district school in Steele County for his primary education. He later attended Pillsbury Academy at Owatonna, from which he was graduated. In 1895 he was married to Miss Mary Haugen, of Blooming Prairie. Doctor Thimsen was graduated with honors from the Keokuk Medical College at Keokuk, Iowa, on March 15, 1898, and on May 12 of the same year he was licensed to practice medicine in Iowa under Certificate No. 6121.[264] He practiced for a short time at Cedar Rapids, Iowa, but soon located at Hayfield in Dodge County. On October 11, 1898, he was licensed to practice medicine in Minnesota under Certificate No. 960.[40] Doctor Thimsen remained at Hayfield for fourteen years, where he became local surgeon for the Chicago and Great Western Railway Company and health officer of Hayfield. He was president of the Dodge County Medical Society in 1909 and 1910. "His large and increasing practice in the four counties, Dodge, Steele, Mower and Olmsted, attest to his skill as a conscientious physician," it was written[387] of him while he remained at Hayfield. In July of 1913 Doctor Thimsen moved to Blooming Prairie in Steele County,[388] where he experimented with a fox farm in addition to practicing medicine. In 1928 or 1929 he moved to a site north of Stillwater, Minnesota, where he has since owned and operated the Superb Fox Ranch on Rural Route No. 2. There Doctor Thimsen breeds and rears blue foxes, Alaskan foxes and silver foxes.

Dr. Anthony N. Sorenson (1875-1901) was a native of Dodge County. He was born at Claremont on November 21, 1875, the son of Oscar C. F. Sorenson and Maren Christina Peterson Sorenson.[389] His father was a veteran grist miller of Dodge County. Doctor Sorenson was educated at the grade school in Mantorville, and was graduated from the Kasson High School in 1895. He then entered the University of Minnesota College of Medicine and Surgery, from which he was graduated in 1899. On June 22, 1899, he received License No. 1074 from the Minnesota State Board of Medical Examiners,[40] and in July of the same year it was announced[167] that he would take the place of Dr. Lewis L. Mayland (1871-) at Hayfield in Dodge County. In August of that year it was reported[390] that Doctor Sorenson had made the trip from Kasson to Hayfield on bicycle, and Doctor Mayland[160] has said that Doctor Sorenson assisted him in several surgical operations before he (Mayland) left Hayfield. He remembered Doctor Sorenson as a "prince of a fellow."[160] Once he was established in Hayfield, Doctor Sorenson began the practice of his profession, and he soon had many friends in the village and surrounding countryside, where, as a matter of fact, his family had been known for years. He was liked and respected by his colleagues in the region, and is known to have attended at least one session of the Olmsted County Medical Society,[391] but he soon decided to locate elsewhere. On October 11, 1900, he was licensed to practice medicine in South Dakota,[72] and he settled at Oldham in that state. After a particularly severe winter, during which he traveled laboriously over bad roads in wretched weather, Doctor Sorenson was afflicted with pneumonia, from which he never recovered. He was returned to his home at Kasson, and there he died on July 6, 1901.[392,393] He was known as an accomplished violinist and pianist, and it was said that at one time he had seriously considered the prospect of abandoning medicine for a career in music.

Dr. Edward Henry Kerkhoff (1872-1918), as has been said previously, was in Kasson for a short while in the year 1899; but he did not remain there long; certainly not long enough to establish a practice there. It was suggested that after he left Kasson he went to Plainview, but if he did, he likewise did not remain there long, as will be shown.

Doctor Kerkhoff was born on May 13, 1872, on a farm in Spring Hill Township, in Stearns County, Minnesota, some eight miles from the town of Melrose.[394] He was the son of a farmer, Conrad Kerkhoff, a native of Lippstadt, Westphalia, Germany, and Catherine Horner Kerkhoff, a native of Stuttgart in Württemberg, Germany.[394] Doctor Kerkhoff's mother and father had come to the United States at an early time, and had come to Minnesota from Wisconsin. In 1884 the Kerkhoff family moved to Melrose, and there the boy went to school. For a time he devoted himself to the study of telegraphy, but in 1894, according to his widow,[394] he decided to study medicine. He then enrolled in the old Hamline University Medical Department (Minneapolis College of Physicians and Surgeons), from which he was graduated in 1899. A year previously, on June 16, 1898, he had been licensed to practice medicine in Minnesota.[40] He completed his internship at the Minneapolis City Hospital, as it was then called. It seems certain that Doctor Kerkhoff went to Pierz only a short while after he left Kasson, for his widow[394] has reported that he began to practice medicine in Pierz on December 19, 1899. In 1904 he was married to Miss Rose Vorath, a native of Agram Township in Morrison County, some five miles from Pierz. Two children were born to them.

In 1906 Doctor Kerkhoff moved to Richmond in Stearns County, but at the end of a year he was back in Pierz, where he remained until his death. There he practiced medicine, served as editor of the *Pierz Journal*, and interested himself in farming. He was known as a keen, tireless physician who drove himself without surcease in the care of his patients. He was said[394] to be exceptionally well read, conversant with many branches of knowledge outside the practice of medicine. It was, in fact, his devotion to his patients which in a large measure contributed to his death. He had been ill for several weeks in the fall of 1918, but had insisted on seeing and caring for his patients. This was at the height of the pandemic of influenza of the first World War. Doctor Kerkhoff soon fell victim to the disease. Pneumonia complicated the influenza, and he died in Pierz on November 15, 1918,[395] at the relatively early age of forty-eight years.

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WAGNER-MURRAY BILL

The American Bar Association has released the report of its special committee to study the portions of the Wagner-Murray Bill relating to federal control and regulation of medical practice and hospitalization. This report considers in detail the provisions and implications of S. 1161, and fills thirty-five double-spaced typewritten pages.

The following summary has been taken from the last two pages of the report:

Conclusion

The American Bar Association is limited to an expression of opinion and judgment with respect to those fields which relate to the administration of justice and which directly affect the safeguards and protection of the rights and liberties of the citizens of this country. Under normal circumstances, therefore, it is not the function of this Association to attempt to influence substantive legislation by the Congress of the United States. But when under the pretext of the general welfare legislation is proposed in Congress which either inadvertently or with deliberate subtlety constitutes a direct attack on the rights and liberties of the citizens of this country, it becomes the duty of this Association actively to voice its objections, a summary of which is as follows:

1. Local self-government must be preserved in our federal system. State governments directly responsible to the will of the people are best adapted to exercise such supervisory control as may be instituted over the health and medical care of our citizens.

2. S. 1161 seeks to invest in the Surgeon General who is not an elected servant of the people and who is not amenable to their will the power arbitrarily to make rules and regulations having the force and effect of law which directly affect every home.

3. The measure furnishes the instrumentality by which physicians for their practice, hospitals for their continued existence and citizens for their health and that of their families can be made to serve the purposes of a federal agency.

4. The bill fails to safeguard the rights of patients, citizens, hospitals or doctors with respect to disputes arising or rights denied through the arbitrary or capricious action of one man.

5. The bill fails to provide for any appeal to any court from the action of the Surgeon General.

6. The vicious system whereby administrative officials judge without court review the actions of their subordinates in carrying out orders issued to them is extended in this bill to a point foreign to our system of government and incompatible with the adequate protection of the liberties of the people.

The Constitution of the United States is designed to protect the citizens of this republic in the exercise of the rights of free men. The provisions of that instrument can be rendered impotent, when our citizens, for the sake of an apparent immediate benefit, surrender to their government such direct control over their lives that government, by imposing a constant fear upon them of having those benefits withheld or withdrawn, can compel from them obedience and subservience to its dictates.

President's Letter

The program of the 91st Annual Meeting of the Minnesota State Medical Association at Rochester, April 13, 14 and 15, is printed elsewhere in this issue. It may be recommended to every member of the Association as a program of value and distinction which he can ill afford to miss, no matter how busy he may be with wartime practice.

Vice-Admiral Ross T. McIntire, Surgeon General of the Navy, and a group of well-known, out-of-state speakers will be there. There will be special sessions arranged by the Academy of Ophthalmology, by the American College of Chest Physicians and by a group of orthopedists and fracture surgeons. There will be a program of scientific motion pictures and demonstrations and a series of surgical clinics at the Rochester hospitals. Round-Table Discussion Luncheons are scheduled for Friday noon and the annual banquet will be Friday evening at the Rochester State Hospital.

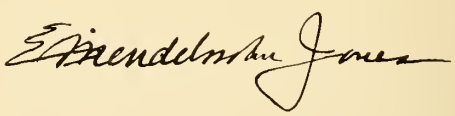
On the lighter side is the Open House, at which the Olmsted-Houston-Fillmore-Dodge County Medical Society and the State Association will be hosts Thursday night, in the Arena and Theater of the Mayo Civic Auditorium. Also the usual reunions, scheduled and unscheduled, which make a state meeting an occasion especially to be planned for and remembered.

The Minnesota State Medical Association and its county units are playing a larger and larger part in the public affairs of the state. They function as an integral part of the state welfare program and are already scheduled to assume a comparable responsibility in the operation of the new physical rehabilitation program in the state. They are undoubtedly destined to play an even more important role in all future social movements having to do with health and public welfare. If they do not, it will mean that medicine will shortly abdicate its position as arbitor of methods and standards of practice.

Policies and programs having to do with these problems will be mapped for the coming year by the House of Delegates at its pre-meeting sessions, Wednesday, April 12.

It is highly important that every delegate prepare himself for these deliberations by careful reading of committee reports in advance of the meeting, and that he take an active part in discussions. Others are invited to attend the sessions and participate.

These are critical times for all of us. The interest we take now in our own organization may make all of the difference in our freedom from hampering regulations in the days to come.



President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

STATE MEDICAL MEETING

MEDICAL meetings feel the effect of the war just as every other activity does. Some national societies have had to curtail certain phases of their meetings or have even suspended meetings entirely for the duration.

Not so with our State Meeting this year, as a perusal of the program will prove. The session will be condensed into two days and a half instead of the full three days. The special sessions and surgical clinics will be held at the same time as the general sessions with the disadvantages of a three-ring circus. The scientific exhibits will be nearly up to normal in number, whereas the technical exhibits number more than ever before.

For those who are particularly interested in surgery, the daily surgical clinics being offered by the Mayo Clinic surgeons should prove of interest and value. The specialist in ophthalmology and otolaryngology, in orthopedics and diseases of the chest will find the special sessions attractive. For the rest of us, the Program Committee has covered the surgical and medical fields well, has not forgotten x-ray and obstetrics, and has included subjects of more recent interest such as chemotherapy and tropical diseases. The Committee, with the assistance of various societies, has arranged for the participation of ten or more prominent out-of-state members of the profession, an arrangement which is stimulating and tends to prevent provincialism.

In spite of having responsibilities at home and difficulties in travel every member should do his best to be at Rochester, April 13, 14, and 15. A few days away from the grind is prescribed at times by us all. Let us take our own prescription.

VOLUNTARY—NOT COMPULSORY SICKNESS INSURANCE

IF the purpose of the submission of the Wagner-Murray Bill to Congress last June was to bring up the question of Federal administration of medical care for discussion, that purpose has been attained. The medical profession, convinced that any such bill would put an end to private practice and would be fatal to American medicine, has been vociferous in its condemnation.

It is a matter of satisfaction to see that other interests in the country have become aroused by this bill. The legal profession, which claims that normally it is against its policy to influence legislation, was so aroused that the American Bar Association appointed a committee to analyze the bill. This committee report* should be read by every physician, for state medicine is likely to continue to be a vital subject although this particular bill, according to reports, is not likely to be passed at this session of Congress.

This analysis by the committee of the American Bar points out that on the basis of employment and income in 1942, the bill would provide $2,339,000,000 for the medical care and hospitalization of some 60,400,000 employed and self-employed individual and their families. Approximately 3,000,000 Federal employes would not be included, as they have already provided these services for themselves. The only individuals left in the field of private practice would be the unemployed who, it is safe to assume, will be increased after the war. Only thirty days of hospital care would be provided for each one insured, except by special dispensation by the Surgeon General of the United States Public Health Service. No provision is made for dental care. The cost of the medical and hospital care of the indigent is not provided for in the bill, and other taxes and the charity of the profession would have to be relied upon for this service.

This analysis comes to the conclusion that this bill, if enacted, would put an end to private practice as we know it today. Doctors would become unambitious federal employes or would be only politically ambitious. To safeguard a small percentage of the population which has difficulty in obtaining complete medical service for unusual and prolonged and therefore expensive medical care, this bill would institute federal administration of

*Committee of American Bar Association report on parts of Wagner-Murray Bill relating to Federal regulation of medicine. J.A.M.A. 124:716 (Mar. 11) 1944.

medical care which the majority of the population do not require or are able to provide for themselves. The report explains further that the bill will lessen the interest of the physician in his patient and will dull incentive. Medical education would be subsidized, regulated, and controlled by the Federal Government. The Surgeon General of the United States Public Health Service, not an elected servant of the people, would arbitrarily make rules controlling physicians, patients, and hospitals, no provision being made in the bill for safeguards such as court appeal in case of disputes.

This interpretation of the Committee of the American Bar Association to the bill simply supports the opinion of the medical profession in their opposition.

Is it true that the American public wishes this Wagner-Murray Bill passed? If the A.F. of L. and C.I.O. favor the bill, it might be presumed that the public at large also favors its enactment.

In this connection the information gleaned from a survey made by the *Opinion* Research Institute for the National Physicians Committee is illuminating. According to this survey, instead of a large majority demanding provision of medical care by the Federal Government, only 21 per cent of the people interrogated had heard of the proposal; when explained, only 32 per cent of the people approved, and half of these changed their minds when the 6 per cent deduction from payrolls was explained—not evidence of a demand for Federal bureaucratic medicine. As a matter of fact, the medical profession can take some comfort in their standing with the public as determined by this survey. In brief, the survey showed that the majority of people have confidence in their personal physicians, demand the right to choose their medical advisors, disapprove of control of the medical profession by the Federal Government, oppose the fixing of physicians' fees, paying the expenses of medical students, and limiting the choice of physicians by the National Government.

Perhaps the most important information obtained by this survey was the indication that there is a desire on the part of the public to participate in plans for insuring against the cost of illness, especially expensive illnesses. This is primarily an insurance problem, but merits the coöperation of the medical profession and employers. And here we come to two schools of thought: (1) that insurance against cost of sickness should be voluntary and not compulsory; (2) that the government should help citizens to help themselves rather than to make life easy for them. People are becoming more insurance-minded as time goes on. No house owner would think of omitting fire insurance. The majority carry life and automobile insurance. The rapid growth of hospital insurance indicates a widespread recognition of its value. Any insurance, however, (sickness included) has to be sold, and it has to be available at a reasonable price. The combined efforts of all concerned should solve this problem by means of voluntary sickness insurance and not by compulsory government insurance with bureaucratic control in Washington.

GIFTS FOR MEDICAL RESEARCH

THE Medical School recently received two substantial gifts for cancer research from citizens of this state. In the one case, the donor was encouraged and aided by his family physician in making this gift. In fact, his physician brought him to the Medical School to discuss the need for and the use which might be made of his gift.

In the other case, the check was received by mail with a note which merely stated that the gift was to be used for cancer research. A note of appreciation to the donor brought the following reply: "I am glad to receive your letter for I had really wanted to write when I mailed the check but didn't want any special attention given to the gift or to myself. The reason that prompted the gift was that both of my parents died from cancer and we, as children, wanted to give money in memory of them, but didn't agree on any place to give our money. I had told our family doctor quite some time ago that I wished to donate money for cancer research but he didn't advise me of any special place. I also told our minister who talked to a physics professor at the University and wrote a note to a medical student at the University, who gave us your name and explained several ways of donating money for cancer research."

If our Medical School is to maintain its enviable position in the fields of medical education and in medical research, it must have the inter-

est, the understanding and the support of the physicians of the state.

I know of no medical school of comparable standing which operates on so limited a budget. It is, therefore, of special importance that gifts for support of its work be secured. Members of the medical profession of the state are in a unique position to assist in the procuring of such gifts.

HAROLD S. DIEHL

APRIL—CANCER CONTROL MONTH

THE month of April will again be observed as Cancer Control Month in the United States. It has been proclaimed so by our President as authorized by Congress. During this month, the Women's Field Army of the American Society for the Control of Cancer will conduct its annual enlistment and educational campaign. Some 300,000 have already joined.

The publicity undertaken by the American Society for the Control of Cancer can scarcely be overdone. Cancer to be cured must be diagnosed early. In spite of the great amount of publicity on the importance of consulting a physician for signs possibly indicating the presence of cancer, physicians not infrequently encounter patients who have observed symptoms which have aroused suspicion of the possibility of malignancy but have procrastinated in the hope that the symptom would disappear and the favorable time for cure had passed. Doubtless cancer phobias have been created in the minds of many over-timid individuals by so much cancer publicity. However, fear of cancer never killed anyone, and early recognition of cancer symptoms has saved many lives.

CORRECTION

At the request of the authors of the Report on Biologics and Laboratory Diagnosis of Infectious Diseases published in the March issue of MINNESOTA MEDICINE, we are pleased to make the following corrections:

Under the heading of Pneumonia, the item *Incidence in Minnesota* should read: The figures for pneumonia for 1943 are unavailable at this time. The pneumonia figures for 1942 were: 3,417 cases with 1,325 deaths.

Under the heading Tuberculosis, the item *Incidence in Minnesota* should read: 2.405 cases with 753 deaths in 1943.

Both items appeared on Page 198 of the March issue.

Chemotherapy, the treatment of infectious diseases with specific chemicals, originated in the 16th century, when the beneficial effect of mercury in the treatment of syphilis was discovered.

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR APRIL

The following radio schedule of talks on medical and dental subjects by William A. O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, Minnesota Hospital Association and University of Minnesota School of the Air:

April 1— 9:15 a.m.	(WCCO)	Nature of Cancer
April 1—11:30 a.m.	(KROC-WLB)	Medicine in the News
April 5—11:00 a.m.	(WLB)	Health Fads
April 8— 9:15 a.m.	(WCCO)	Cancer Research
April 8—11:30 a.m.	(KROC-WLB)	Medicine in the News
April 12—11:00 a.m.	(WLB)	Advertising and Health
April 15— 9:15 a.m.	(WCCO)	Cancer in Women
April 15—11:30 a.m.	(KROC-WLB)	Medicine in the News
April 19—11:00 a.m.	(WLB)	Alcohol and Tobacco
April 22— 9:15 a.m.	(WCCO)	Cancer in Men
April 22—11:30 a.m.	(KROC-WLB)	Medicine in the News
April 24— 4:30 p.m.	(WCCO)	Your Hospital in Wartime. An Educational Institution
April 26—11:00 a.m.	(WLB)	Prevention of Communicable Diseases
April 29— 9:15 a.m.	(WCCO)	Cancer of the Mouth
April 29—11:30 a.m.	(KROC-WLB)	Medicine in the News

WASHINGTON COUNTY MEDICAL SOCIETY

The regular meeting of the Washington County Medical Society was held on Tuesday, March 14, and, in spite of the bad weather, was well attended. Unfortunately, the guest speaker for the evening was unable to come, but promised to come to the next meeting in April. A report of the County Officers' Meeting in Saint Paul was made, followed by committee reports. The meeting was enlivened by the presence of Mr. C. W. O'Brien, Executive Secretary of the Washington County Welfare Board, who reported and asked support for a new method of handling medical bills for the aged.

OCCUPATIONAL THERAPISTS NEEDED

There is an increasing need for occupational therapists in Army and Veterans' hospitals in connection with the rehabilitation of wounded soldiers. In greatest demand are experienced graduates of accredited occupational therapy schools. For some positions, however, college training in psychology and in arts and crafts or trades and industries is required.

The salary range is $1,970 to $2,433 a year. Those appointed at the lower salary will be trainees for a period of eighteen months. There are no age limits nor written tests, but applicants must be physically capable of performing the duties involved.

Further information may be obtained from first and second class post offices or from the United States Civil Service Commission, Washington 25, D. C.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

PREPAYMENT PLANS IN MINNESOTA

Reports from the recent Chicago conference of executives in prepaid plans for medical service showed that the principle has proved, on the whole, practical and that subscriber lists are growing. Several have weathered financial crises and corrected blunders. All may be said to be still in the experimental stage and changes in method may be expected from time to time. But these pioneer efforts are justly presented, as exhibit number one, in support of the thesis that medical men are not conservative diehards, but rather are in the forefront of experimentation with new social ideas and methods. They show, also, that voluntary plans may serve to ease financial burdens without laying upon medical service the heavy hand of government control and bureaucratic regulation.

It is true that the Minnesota State Medical Association has not yet embarked upon sponsorship of any comparable plans in Minnesota. At the same time, it has given its coöperation and approval to a joint experiment with the Farm Security Administration for FSA clients in three counties of the state.

Abuses Negligible

This experiment has now been in existence for two and one-half years and some interesting observations and figures on its operation were presented at the County Officers' Meeting in February by Dr. E. J. Simons of Swanville, chief of the Medical unit of the Division of Social Welfare who participated in the plan in Morrison county.

Certain difficulties which have plagued many such coöperative ventures seem to have been of small consequence in Morrison and Ottertail counties, according to Dr. Simons' report. The plan in Wilkin county, the third one approved for the purpose by the Council, is now under development to replace the Mille lacs county plan which lapsed and is no longer in operation.

In neither Morrison nor Ottertail counties have serious abuses of the service developed, either on the part of subscribers or of participating physicians. This is in contrast to experience of a number of plans elsewhere.

Family Participation Small

The most significant observation made by Dr. Simons on the basis of figures presented from both counties was the fact that never, at any time, has the percentage of subscribers among eligible families reached even the minimum of 75 per cent originally promised by FSA officials. The largest percentage at any time was 67 per cent in Ottertail county in 1942, representing 183 out of 271 eligible families. The percentage for the first year of the plan in Morrison county was 46.7. For the second it was 48.6 but for the first half of the third year it is only 40 per cent.

This circumstance led the participating physicians, at the end of the second year, to point out that 66.6 per cent of eligible families should be enrolled, but that an absolute minimum of 100 families was necessary to assure reasonable expectation of financial solvency. As a result, 129 families were persuaded by FSA officials to subscribe for the current year.

Selling Job Needed

The reason for lack of enthusiasm for the service on the part of FSA families was not discussed by Dr. Simons; but it is probable that here, as in other communities where prepaid service has been offered, a more intensive selling job was needed.

It is clear that health insurance or prepaid medical service is no more likely to sell itself than life insurance. Many people accept the idea as reasonable and would readily reply to a poll—

as they often have—that they would like to have the opportunity of spreading medical costs on an insurance basis. But when it comes to laying out funds in advance, they are likely to consider that their own private risk of immediate illness, is, after all, small, and they could use the money more pleasurably elsewhere. The gap between a pleasant theory and the unpleasant fact involved in giving up real money for an uncertainty has to be bridged by a selling campaign. Life insurance companies have worked hard and spent huge funds on the problem of selling life insurance. Yet only a percentage, though a growing percentage, of the population is adequately protected. Backers of prepayment medical plans, even when they are on a strictly nonprofit basis, must anticipate similar difficulties.

Voluntary Plans Have Advantages

The attraction of a compulsory government plan, financed out of tax funds, lies in the very fact that selling is thus eliminated and costs are so hidden in taxes that the average person feels he will get benefits without paying for them.

On the other hand, selling difficulties should not be allowed to stand in the way of continued experimentation under medical society sponsorship. It is imperative that the way be opened for independent and far-sighted people to budget for medical service on an insurance basis and it is quite possible to show the advantages of voluntary action over increasing government control. The immediate personal advantage of excellent service without red tape or interference, which is possible only in voluntary privately managed enterprises, is capable of demontration.

It may take many years to reach the whole population with such protection; but it will take only a few years under government control for medical service to become of small worth, no matter how wide the coverage. It seems certain that nothing but a vigorous effort on the part of all who cherish private enterprise and the independent practice of medicine will prevent government insurance from becoming a fact, if not this year, then the next, or the next.

America Stands Alone

America now stands almost alone among the great nations of the world in its freedom from government controlled compulsory insurance for medical service. American doctors must therefore not count on an easy job nor on one short legislative fight, to maintain that position.

Actual returns to participating physicians in the Morrison and Ottertail county plans were slightly less, on a percentage basis, than the returns from caring for a like number of relief families using the same Minimum Allowance Schedule of the Division of Social Welfare which is in use in the majority of the counties. On the other hand, a study of medical services showed that 219 FSA families paid $3,300 for medical care in the first year under the plan, while 231 nonparticipating families on the same income status obtained only $400 worth of care in the same year for which $200 was paid to the physicians.

Thus a considerable number of families received much better service than they would have received without the plan and the physicians received a return from a source where little or none could have been expected.

At their request the premium was raised, at the end of the second year, from $23 to $30 for each family; but no figures are available as yet as to experience with the new premium. It is the doctors' conclusion, however, based upon experience in the first two years, that the plan presents many worth-while and desirable features.

REHABILITATION

The following information about the new federally aided program of physical rehabilitation was brought to the county officers at the February meeting by Dr. Dean A. Clark, chief medical officer in charge of the new office of physical rehabilitation in the Federal Office of Vocational Rehabilitation in Washington.

This is a state program to be supported jointly by state and federal funds, with the federal government participating on an advisory but not a regulatory capacity.

No Limit on Appropriations

No limit has been set upon amounts to be appropriated. The federal government will pay 50 per cent of costs for rehabilitation of civilians suffering from static or slowly progressive disabilities which interfere with employment and who are in need of assistance. The beneficiary need not, however, be on relief. The government will pay complete costs for the war disabled civilians and federal employes, (disabled

veterans are provided for in other legislation), and will pay total administrative costs in all categories. Mental disease will be included.

The objective, however, is primarily a vocational rehabilitation program in which physical restoration is but one factor. Vocational programs have been operating here and elsewhere for some time, but no funds have been available for physical rehabilitation.

Minnesota Men on Committee

Federal funds cannot be used, however, for more than 90 days treatment though the states are at liberty to pay for longer treatment if they wish to do so.

As a general rule, general medical care is not available during vocational training. But each case will have a general physical examination, even when no restoration is contemplated, and such specialists' services as are indicated.

Federal participation is administered by the new physical rehabilitation office in the Federal Office of Vocational Rehabilitation of the Federal Social Security Agency, of which Michael Shortly is director. Two medical officers, one in charge of medical and the other of hospital services, administer the office (Dr. Clark being director for medical services). Later there may be a medical social worker, an occupational therapist and an expert in prosthetic services in the office. There are eight representatives in various sections of the country in charge of federal aspects of both educational and medical programs, the purpose being to close the gap between the states and Washington. John Lasher is the representative for this section, with headquarters in Minneapolis. There is also a national medical advisory committee of 20, most of whom are specialists in many fields relating to rehabilitation. Two Minnesota men, Dr. Horace Newhart of Minneapolis and Dr. E. S. Mariette of Oak Terrace, are members.

Medical Advisory Committee Will Be Used

In addition, each state office must have advice from state bodies and consultants. For this purpose the Council has approved use of the State Medical Advisory Committee of the Division of Social Welfare and the county medical advisory committees.

Parts of the program which cannot be operated at the moment under state laws may be operated completely with federal money up to July of this year.

"I congratulate you in Minnesota," Dr. Clark told the county officers, "that you are planning to utilize the medical advisory committees already set up to serve with the Division of Social Welfare. You will thus be assured of a unified program and the services of the committees will be available without trouble and loss of time to the office of Vocational Rehabilitation in the Department of Education under which the program will operate here.

"I hope other states will model their arrangements on the Minnesota plan and I shall point to it with pride in the hope that we may have similar medical plans in the other states."

SCHOOL HEALTH

Minnesota school executives, under stimulus of their new state commissioner of education, Mr. Dean A. Schweickhard, have developed an extensive plan of health education which should fill a serious gap in elementary education and correct some well-meaning mistakes of the past.

Time was, not so long ago, when health education in the schools was mostly a matter of urging the children to brush their teeth, while at the same time, the child with a cold or fever was applauded if he helped to maintain a perfect attendance record by coming to school as usual.

Dean Schweickhard's plans were competently outlined to county officers at their February meeting. The assistance and understanding of physicians in developments in the schools of their own communities was asked and will certainly be given.

In the plan which Minnesota schools are working hard to establish, teachers as well as school nurses, are to make regular health inspections of their classes. They are to be taught to watch for common indications of illness, physical defects or maladjustments and to report them promptly to the family physician.

Physicians to whom the child may then be referred can do much, not only to aid the child, but to help the schools in their endeavors, by giving careful attention to reports from school authorities. They should be ready to coöperate wholeheartedly in improving health conditions within the school and in supervising and standardizing their teaching about health practices.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. DuBois, M.D., Secretary

Minneapolis Woman Pleads Guilty to Practicing Optometry Without A License

Re: State of Minnesota vs. Delia Ann Coose

On March 9, 1944, Mrs. Delia Ann Coose, forty-six years of age, Apartment 30, 36 Spruce Place, Minneapolis, entered a plea of guilty in the District Court of Hennepin County to an information charging her with the crime of practicing optometry without a license. The Hon. Levi M. Hall, Judge of the District Court, sentenced Mrs. Coose to pay a fine of $50.00 or to serve twenty days in the Minneapolis Workhouse, the sentence being stayed for one year on the express condition that the defendant refrain, in every manner, from practicing healing, medicine or optometry.

The investigation in the instant case was conducted by the State Board of Optometry, who after ascertaining from the State Board of Medical Examiners that the defendant did not have a license as a physician in Minnesota, proceeded to secure the necessary evidence to warrant a prosecution of the defendant. This evidence disclosed that the defendant advertised as follows in the *Minnesota Daily* at the University of Minnesota:

> "Better vision without glasses.
> Teacher of Bates Method. For
> appointment phone Ma. 7397."
> Minnesota Daily, January 11, 1944.

Mrs. Coose charged $3.00 for her services for each visit of the patient. Her services consisted of prescribing eye exercises. On February 29, 1944, a criminal complaint was signed by the President of the State Optometry Board. The defendant was arrested on March 1, and held in jail over night until she was arraigned in the Municipal Court. She was subsequently released on $500.00 bail after entering a plea of not guilty. Her trial was set for March 9, on which date she withdrew her plea of not guilty and entered a plea of guilty.

The defendant told the court that she came to Minneapolis about year ago from Massachusetts, and that she had a certificate authorizing her to use the Bates Method of eye exercises. Judge Hall cautioned the defendant that she had no legal right to engage in the practice of optometry, medicine or healing until she had first complied with the various laws of this state.

Saint Paul Physician Sentenced to 180 Days in Minneapolis Workhouse

Re: State of Minnesota vs. John Henry Spearing, Jr.

On March 15, 1944, Dr. John Henry Spearing, Jr., thirty-two years of age, residing at 809 Cleveland Avenue South, Saint Paul, was sentenced to a term of 180 days in the Minneapolis Workhouse following Dr. Spearing's plea of guilty to a charge of careless driving and driving without a license in his possession. Dr. Spearing was arrested about 1:30 A.M., March 1, 1944, following a traffic accident at Third Avenue South and Fifth Street, Minneapolis, several persons being injured in the accident. Dr. Spearing was released on $125 cash bail, but failed to appear in court on March 8, when his case was called, with the result that Judge Earl J. Lyons ordered the bail forfeited and a bench warrant issued for Dr. Spearing's arrest. When Dr. Spearing was ordered into court on the bench warrant, he obviously was not in any condition to stand trial. The court ordered him taken to the Minneapolis General Hospital for observation and the case was continued for one week. On March 15, Dr. Spearing entered a plea of guilty to both charges.

In view of Dr. Spearing's previous criminal record, including ten arrests and convictions for drunken driving, drunkenness, drunk and disorderly conduct, Judge Lyons could hardly have been expected to impose any other sentence. Before sentencing the defendant, Judge Lyons stated that the medical profession is, perhaps, the most noble of all the professions, but that a certain few individuals, such as the defendant, through the excessive use of liquor, constantly chip away at the monument built by the honorable members of the profession. Judge Lyons stated that after the defendant had served sixty days, he could apply to the court for a parole from the balance of the sentence.

The Minnesota State Board of Medical Examiners has issued a citation requiring Dr. Spearing to show cause why his license as a physician should not be revoked. Dr. Spearing was licensed on July 10, 1942, on reciprocity with Wisconsin. Prior to being licensed, Dr. Spearing was called before the Medical Board and warned that his drunkenness must cease and that his escapades would not be tolerated in Minnesota. He stated to the Board at the time that his difficulties were domestic rather than liquor. Subsequent developments would indicate that Dr. Spearing erred slightly in his explanation. The motivating factor in licensing Dr. Spearing was the War Emergency and the desire of a large munitions manufacturer to employ Dr. Spearing with full knowledge of his previous record at Milwaukee. Under those circumstances, Dr. Spearing's license was granted with the above-mentioned warning.

Minneapolis Physician Pleads Guilty to Abortion and Surrenders Medical License

Re: State of Minnesota vs. Orel A. Kibbe

On March 8, 1944, Orel A. Kibbe, M.D., 4316 Upton Avenue South, Minneapolis, entered a plea of guilty in the District Court of Hennepin County, to an information charging him with the crime of abortion. Dr. Kibbe, sixty-three years of age, surrendered, in open court, his medical license and his basic science certificate with a written request that they be cancelled by the Minnesota State Board of Medical Examiners and the State Board of Examiners in the Basic Sciences, respectively. Following the surrender of Dr. Kibbe's medical license and basic science certificate the Hon. Levi M. Hall, Judge of the District Court, imposed a sentence of not to exceed four years in a state penal institution and stayed the execution of the sentence for a like period of time upon condition that Dr. Kibbe absolutely refrain from practicing medicine in any manner, and also refrain from doing any abortions. Dr. Kibbe was warned by the court that if he violated the conditions of the stay, the court would summarily revoke the stay and the sentence would have to be served.

Dr. Kibbe was arrested on February 28, 1944, following a lengthy investigation into Dr. Kibbe's activities by the Women's Bureau of the Minneapolis Police Department and the State Board of Medical Examiners. Evidence was obtained that Dr. Kibbe had performed a considerable number of abortions for fees ranging from ten to thirty-five dollars each. On March 1, 1944, Dr. Kibbe waived a preliminary hearing in the Municipal Court of Minneapolis and was held to the District Court. On the same date Dr. Kibbe was arraigned in the District Court, entered a plea of not guilty and was released upon cash bail in the sum of $2,000. Dr. Kibbe, subsequently, withdrew his plea of not guilty and entered a plea of guilty.

Dr. Kibbe was born in 1880 and graduated in medicine from the University of Minnesota in 1905. Dr. Kibbe was licensed to practice medicine in Minnesota the same year. For the past seventeen years Dr. Kibbe has practiced at Minneapolis, and for thirteen years prior to that time was located at Canton, Minnesota.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Physicians Licensed February 11, 1944

December 20, 21, 22, 1943 Examination

Adams, Forrest Hood, U. of Minn., M.B., 1943, 1000 Univ. Ave. S. E., Minneapolis, Minn.

Anderson, Arnold Severen, Jr., U. of Minn., M.B., 1943, 4634 Bruce Ave. S., Minneapolis, Minn.

Anderson, Harold James, U. of Minn., M.B., 1943, 771 Geranium Ave., St. Paul, Minn.

Anderson, Milton Winfield, U. of Minn., M.B., 1943, Boston City Hospital, Boston, Mass.

Avrick, Alan Max, U. of Minn., M.B., 1943, 1319 Lincoln Ave., St. Paul, Minn.

Bauman, Kenneth Louis, U. of Minn., M.B., 1943, Milwaukee County Hosp., Milwaukee, Wis.

Bergan, Donald Everett, U. of Minn., M.B., 1943, King County Hosp., Seattle, Wash.

Berge, Harry Leroy, U. of Minn., M.B., 1943, 2524 31st Ave. S., Minneapolis, Minn.

Bergeron, V. Lorel, U. of Minn., M.B., 1943, 3901 Thomas Ave. S., Minneapolis, Minn.

Blumenthal, Philip Louis, U. of Minn., M. B., 1943, St. Mary's Hosp., Minneapolis, Minn.

Boom, Gaylord Willis, U. of Minn., M.B., 1943, Detroit Receiving Hosp., Detroit, Mich.

Brickley, Paul Michael, U. of Minn., M.B., 1943, St. Luke's Hosp., Chicago, Ill.

Brimi, Robert John, U. of Minn., M.B., 1943, Eloise Hosp. & Infirmary, Eloise, Mich.

Burseth, Edgar Carlyle, U. of Minn., M.B., 1943, 535 Asbury, Apt. 1, St. Paul, Minn.

Carlander, Lesteer William, Jr., U. of Minn., M.B., 1943, 4227 Harriet Ave. S., Minneapolis, Minn.

Christensen, Mentor Halfdan, U. of Minn., M.B., 1943, St. Mary's Hosp., Duluth, Minn.

Covey, Kenneth Wilbur, U. of Minn., M.B., 1943, 920 S. 7th St., Minneapolis, Minn.

Craven, James Patrick, Loyola, M.D., 1943, Williston, N. D.

Dale, Lester N., U. of Minn., M.B., 1943, St. James, Minn.

Dargay, Cyril Paul, Marquette, M.D., 1943, 1404 N E. University, Minneapolis, Minn.

Dougherty, John Wallace, U. of Minn., M.B., 1943, U. S. Marine Hospital, Staten Island, N. Y. C.

Egge, Sanfort Granger, U. of Minn., M.B., 1943, King County Hospital, Seattle, Washington.

Enquist, Irving Fritiof, U. of Minn., M.B., 1943, St. Mary's Hospital, Minneapolis, Minn.

Fee, John Gifford, U. of Minn., M.B., 1943, St. Mary's Hospital, Duluth, Minn.

Feigal, William Max, U. of Minn. M.B., 1943, 1903 Columbus Ave., Minneapolis, Minn.

Ferrell, Clarence Richard, U. of Minn., M.B., 1943, Bethesda Hospital, St. Paul, Minn.

Firestone, George Maurice, U. of Minn., M.B., 1943, 1866 Portland Ave., St. Paul, Minn.

Gamble, Alice Hawthorne, U. of Minn., M.B., 1943, John Sealy Hospital, Galveston, Texas.

Gericke, Julius Theodore, Jr., Marquette, M.D., 1943, 123 W. Summit Ave., St. Paul 2, Minn.

Gibbs, Robert William, U. of Minn., M.B., 1943, Presbyterian Hosp., Chicago, Ill.

Griess, Donald Ferdinand, U. of Neb., M.D., 1942, Irwin Apt. 29, 23 7th Ave. S. W., Rochester, Minn.

Halme, William B., U. of Minn., M.B., 1943, St. Mary's Hospital, Detroit, Michigan.

Hodgson, John Robert, U. of Mich., M.D., 1940, Mayo Clinic, Rochester, Minn.

Hohm, Paul Harrold, U. of Chicago, M.D., 1943, Ancker Hospital, St. Paul, Minn.

Horns, Howard L., U. of Minn., M.B., 1943, 142 Arthur S. E., Minneapolis, Minn.

Hruza, William John, U. of Minn., M.B., 1942, 2615 Park Ave., Minneapolis, Minn.

Johnson, Carl Laurence, U. of Minn., M.B., 1943, U. S. Naval Hosp., Great Lakes, Ill.

Johnson, Edward Alfred, U. of Minn., M.B., 1943, Truman, Minnesota.

Johnson, Kenneth Joseph, U. of Minn., M.B., 1943, Seymour Hospital, Eloise, Michigan.

Johnson, Paul Raymond, U. of Minn., M.B., 1943, Hosp. of Good Samaritan, Los Angeles, Calif.

Johnson, Reinald Gustav, U. of Minn., M.B., 1943, Bethesda Hospital, St. Paul, Minn.

Kaliher, Howard, U. of Minn., M.B., 1943, 800 4th St. S. E., Minneapolis 14, Minn.

Kelley, Kenneth John, U. of Minn., M.B., 1943, Swedish Hospital, Minneapolis, Minn.

Kleifgen, George Van Horn, U. of Minn., M.B., 1943, Mayo Clinic, Rochester, Minn.

Knudsen, Helen L., U. of Minn., M.B., 1943, 500 S. E. Harvard, Apt. 11, Minneapolis, Minn.

Kueffner, William Robert, U. of Minn., M.B., 1943, Route No. 4, Rockville, Md.

Lagaard, Sheldon Miller, U. of Minn., M.B., 1943, 3608 19th Ave. S., Minneapolis, Minn.

Lehman, Samuel John, U. of Minn., M.B., 1943, 4001 N. Dupont Ave., Minneapolis, Minn.

Litman, Neil Norman, U. of Minn., M.B., 1943, Detroit Receiving Hosp., Detroit, Michigan.

Litman, Robert Elkon, U. of Minn., M.B., 1943, Kings County Hospital, Brooklyn, N. Y.

Lober, Paul Amoor Hallam, U. of Minn., M.B., 1943, 4012 W. 44th St., Minneapolis, Minn.

Lynch, James Leo, U. of Minn., M.B., 1943, Minneapolis General Hosp., Minneapolis, Minn.

Mallette, Lester Birch, Northwestern, M.B., 1943, Ancker Hospital, St. Paul, Minn.

Martin, Frank Edgerton, U. of Minn., M.B., 1943, 70 S. 12th St., Minneapolis, Minn.

McAdams, John Brennan, U. of Minn., M.D., 1943, 1105 W. 7th Street, St. Paul 2, Minn.

Merner, Thomas Borden, U. of W. Ont., M.D., 1937, 1820 4th St. S. E., Minneapolis, Minn.

Miller, Zondal Ronald, U. of Minn., M.B., 1943, 307 1st Ave. N., Chisholm, Minn.

Mudgett, Roxie Tyler, U. of Minn., M.B., 1943, Illinois Research Hosp., Chicago, Illinois.

Nelson, Alfred Sidney, U. of Minn., M.B., 1943, Ancker Hospital, St. Paul, Minn.

Nesset, William Dean, U. of Minn., M.B., 1943, Milwaukee County Hosp., Milwaukee, Wis.

Norum, Henry Alvin, U. of Minn., M.B., 1943, 1741 Lincoln Ave., St. Paul, Minn.

Orr, Burton Allyn, U. of Minn., M.B., 1943, Detroit Receiving Hosp., Detroit, Michigan.

Petersen, Glenn Llewellynn, U. of Minn., M.B., 1943, Baltimore City Hospitals, Baltimore, Md.

Petters, Robert John, U. of Minn., M.B., 1943, Buffalo General Hosp., Buffalo, New York.

Regan, John James, U. of Minn., M.B., 1943, St. Mary's Hospital, Duluth, Minnesota.

Rieman, Robert William, U. of Minn., M.B., 1943, Milwaukee County Hosp., Milwaukee, Wisconsin.

Rockwell, Curtiss V., U. of Minn., M.B., 1943, 2878 Holmes Ave. S., Minneapolis, Minn.

Rockwood, Philo Harvey, U. of Minn., M.B., 1943, Ball Memorial Hospital, Muncie, Ind.

Rogin, Norton, U. of Minn., M.B., 1943, Queens General Hosp., Jamaica, Long Island, N. Y.

Rothnem, Morris Stanley, U. of Minn., M.B., 1943, 2733 Portland Ave., Minneapolis, Minn.

ROTNEM, ORVILLE MORRIS, U. of Minn., M.B., 1943, Milwaukee County Hosp., Milwaukee, Wisconsin.
RYDING, VINCENT THEODORE M., U. of Kans., M.D., 1942, Starbuck, Minnesota.
SANDERSON, DAVID JOHN, U. of Minn., M.B., 1943, U. S. Naval Hospital, Seattle, Washington.
SBOROV, VICTOR MAX, U. of Minn., M.B., 1943, 2829 Portland Ave. S., Minneapolis, Minn.
SEEBACH, LYDIA MARIE, U. of Minn., M.B., 1943, Kings County Hospital, Brooklyn, New York.
SHAFFER, JOHN ORDIE, U. of Minn., M.B., 1943, Philadelphia General Hosp., 34th St. and Curie Ave., Philadelphia, Pa.
SHAPIRO, MARVIN JAMES, U. of Minn., M.B., 1943, 220 W. Minnehaha Pkwy., Minneapolis, Minn.
SHEEHAN, JOHN RICHARD, U. of Minn., M.B., 1943, 1212 Shatto St., Los Angeles, Calif.
SIMMONDS, HARRY NORMAN LOUIS, U of Minn., M.B., 1943, 1562 N. Hamline Ave., St. Paul, Minn.
SKORNECK, ALAN BERNARD, U. of Minn., M.B., 1943, Queens General Hospital, Jamaica, Long Island, N. Y.
SMITH, CLYDE LEROY, U. of Minn., M.B., 1943, 3814 Bloomington Ave. S., Minneapolis, Minn.
STAPP, JOHN PAUL, U. of Minn., M.B., 1943, St. Mary's Hospital, Duluth, Minn.
TEMPLETON, HELENE MAE, U. of Minn., M.B., 1943, St. Barnabas Hospital, Minneapolis, Minn.
TROW, WILLIAM HOWARD, U. of Minn., M.B., 1943, 310 E. 22nd St., Minneapolis, Minn.
TRUESDALE, CLARK WELLS, U. of Minn., M.B., 1943, Chas. T. Miller Hospital, St. Paul, Minn.
TURBAK, CHARLES ELROY, U. of Minn., M.B., 1943, Lincoln Hospital, 320 Concord Ave., Bronx 54, New York.
VADHEIM, ROBERT HAROLD, U. of Minn., M.B., 1943, Tyler, Minnesota.
VAN CLEVE, HORATIO PHILLIPS, JR., U. of Minn., M.B., 1943, 3248 Park Ave., Minneapolis, Minn.
VAN RYZIN, DONALD JOHN, U. of Minn., M.B., 1943,
WALSTAD, PAUL MARION, U. of Minn., M.B., 1943, Hosp. of Good Samaritan, 1212 Shatto, Los Angeles, Calif.
WATSON, ROBERT MCLEAN, U. of Minn., M.B., 1943, 149 Summit Ave., St. Paul 2, Minn.
WILCOX, G. CHARLES, U. of Minn., M.B., 1943, Miller Hospital, St. Paul, Minn.
YORDY, FRANK SCRIBNER, U. of Wis., M.D., 1943, Ancker Hospital, St. Paul, Minn.
ZARLING, VIRGIL RICHARD, U. of Minn., M.B., 1943, Baltimore City Hosp., Baltimore, Md.

January 18, 19, 20, 1944 Examination

BURNS, CATHERINE, U. of Minn., M.B., 1943, University Hospital, Minneapolis, Minn.
CIARAMELLI, LETIZIA CARMELA, N. Y. Med. Coll., M.D., 1942, Box 37, Mayo Clinic, Rochester, Minnesota.
COCHRAN, HIRAM DEE, U. of Tenn., M.D., 1941, Mayo Clinic, Rochester, Minnesota.
GUERIN, BRIANT BOWMAN, Duke, M.D., 1941, Mayo Clinic, Rochester, Minnesota.
HALL, ARTHUR MARTIN, U. of Minn., M.B., 1943, 3136 10th Ave. S., Minneapolis, Minn.
KUSSKE, DOUGLAS RAYMOND, U. of Minn., M.B., 1943, Swedish Hospital, Minneapolis, Minn.
LANE, MARGARET MARY, U. of Ill., M.D., 1943, 8520 Watertown Plank Rd., Milwaukee 13, Wisconsin.
MERRICK, CHARLOTTE TESCHAN, U. of Minn., M.D., 1943, 1500 Chicago Ave., Minneapolis, Minn.
NORD, ROBERT EDWARD, U. of Minn., M.B., 1943, 1453 Medical Arts Bldg., Minneapolis, Minn.
PYLE, MARJORIE MCDONALD, U. of Kans., M.D., 1940, Mineral Springs San., Cannon Falls, Minn.
SMITH, ARTHUR LAWRENCE, JR., Rush, M.D., 1940, Mayo Clinic, Rochester, Minn.
STEVES, RICHARD JEROME, Northwestern, M.D., 1937, 2107 Pleasant Ave., Minneapolis, Minn.
WALLEN, JOHN WALFRED, JR., U. of Oregon, M.D., 1943, Ancker Hospital, St. Paul, Minn.

By Reciprocity

SCHNEIDER, LAWRENCE EDWARD, U. of Colo., M.D., 1929, 258 W. 6th St., Erie, Pa.
HUNT, WALLACE DANIEL, Northwestern, M.D., 1927, 401 City Hall, Minneapolis, Minn.
STUART, ROBERT LEO, U. of Neb., M.D., 1942, Mayo Clinic, Rochester, Minn.
DEVINE, KENNETH DANIEL, State U. of Ia., M.D., 1941, 112 11th St. S. E., Rochester, Minn.

By National Board Credentials

YOUNG, BASCOM BROCKENBROUGH, U. of Va., M.D., 1929, 1026 Medical Arts Bldg., Duluth, Minn.

MASKED MASTOIDITIS

(Continued from Page 284)

sulfathiazole were continued in the hospital. The patient continued to have an afternoon temperature of from 100° to 100.6° F. The swelling and redness over the mastoid region increased gradually and the cervical tenderness and edema decreased. Except for slight congestion noted on one day, the tympanic membrane appeared normal.

On October 29, 1942, fluctuation was elicited over the mastoid region and repeated roentgenograms disclosed an increase in the cloudiness of the mastoid cells. On this day complete mastoidectomy was performed. A large subperiosteal abscess was encountered which contained approximately ½ ounce (15 c.c.) of pus. The abscess had originated from a break in the central portion of the mastoid process. Many diseased cells were encountered throughout the mastoid bone. The tip of the mastoid process was removed completely. Myringotomy also was performed. The eardrum appeared normal and no discharge was present in the middle ear. The postoperative course was uneventful. The patient was dismissed from the hospital on the eighth postoperative day and was dismissed from our observation on November 30, 1942. The patient returned six months later for removal of her tonsils and adenoids. She had not had any further trouble with her ear.

Comment

This case, we believe, illustrates that mastoiditis can occur without the development of acute suppurative otitis media. The appearance of the eardrum on several occasions was an indication that the infection had extended from the nasopharynx to the middle ear, by way of the aditus ad antrum, to the mastoid cells, as stressed by Hempstead.

References

1. Hempstead, B. E.: Mastoiditis without apparent involvement of the middle ear. J.A.M.A., 81:1266-1270, (Oct. 13) 1923.
2. Kopetzky, S. J., and Almour, Ralph: A report of three cases of primary acute mastoiditis. Laryngoscope, 35:774-777, (Oct.) 1925.
3. Mackenzie, G. W.: Latent mastoiditis with necrotic bone. Laryngoscope, 39:501-505, (Aug.) 1929.
4. Pastore, P. N., and Hempstead, B. E.: Atypical mastoiditis: report of case in which persistent pain was the only symptom. Proc. Staff Meet., Mayo Clin., 13:593-595, (Sept. 21) 1938.
5. Smith, S. M.: Unusual types of mastoiditis, with presentation of patients. Ann. Otol., Rhin. & Laryng., 36:439-447, (June) 1927.
6. Williams, H. L., Jr.: Masked mastoiditis. Minnesota Med., 15:813-820, (Dec.) 1932.

MINNESOTA STATE MEDICAL ASSOCIATION

Ninety-first Annual Session

Mayo Civic Auditorium, Rochester, Minnesota

April 13, 14, 15, 1944

ANNOUNCEMENTS

Scientific Cinema—Please note that scientific motion pictures will be shown in the South Room, before each morning and afternoon session and at each intermission. In addition, scientific films provided by courtesy of our technical exhibitors will be shown at 5:00 p.m. at the conclusion of Thursday and Friday sessions. Whenever possible, authors will be present to answer questions and discuss films.

Luncheons.—Eight Round Table Discussion Luncheons have been arranged for Friday noon, April 14. Tickets must be purchased in advance for these luncheons. Lists of subjects and leaders are printed in this program and on the reservation cards mailed with the program. Attendance at each luncheon is limited and late-comers will be accommodated according to their choice if limits have not already been reached. Tickets $1.00.

Annual Banquet.—The annual dinner for members, guests and their wives will be held at the Rochester State Hospital, Friday, April 14, at 7:00 p.m. Vice Admiral Ross T. McIntire, Surgeon General of the Navy, and E. Mendelssohn Jones, President of the Minnesota State Medical Association, will be banquet speakers. Tickets $1.50.

Open House.—All convention visitors and their wives will be guests of the Olmsted-Houston-Fillmore-Dodge County Medical Society and the Minnesota State Medical Association at an Open House to be held Thursday night, April 13, in the Mayo Civic Auditorium Arena and Theater. Exhibits will be open for leisurely inspection at 7:00 p.m. in the Arena. Herman L. Kretschmer, President-elect of the American Medical Association, will be present to extend a greeting from the American Medical Association. A Variety Show by professional entertainers will begin at 8:30 p.m. in the Auditorium Theater.

Guest Speakers.—We are indebted to the following societies for guest speakers at this meeting:

The Minnesota Radiological Society—speaker, Ralph S. Bromer, Director, X-Ray Department, The Bryn Mawr Hospital, Bryn Mawr, Pennsylvania, who will deliver the annual RUSSELL D. CARMAN MEMORIAL LECTURE in Radiology.

The Northern Minnesota Medical Association—speaker, Ralph M. Waters, Professor of Anesthesia, University of Wisconsin, Madison, Wisconsin.

The Northwestern Pediatrics Society—speaker, Hugh McCulloch, Associate Professor of Clinical Pediatrics, Washington University School of Medicine, St. Louis, Missouri.

Mayo Foundation for Medical Education and Research—speaker Sumner L. Koch, Associate Professor of Surgery, Northwestern University, Chicago, Illinois.

Other guest speakers at this meeting:

Vice Admiral Ross T. McIntire, Surgeon General of the Navy, Washington, D. C.

Herman L. Kretschmer, President-elect of the American Medical Association, Chicago, Illinois.

Raymond W. McNealy, Associate Professor of Surgery, Northwestern University, Chicago, Illinois.

John H. Moore, Chairman, North Dakota State Maternal Welfare Committee, Grand Forks, North Dakota.

Ralph A. Reis, Professor of Obstetrics and Gynecology, University of Illinois, Chicago, Illinois.

Medal.—The Southern Minnesota Medical Association will present its annual medal for the best scientific exhibit presented by an individual physician at this meeting. Presentation will be made at the Banquet, Friday evening, April 14, at the Rochester State Hospital.

Fifty Club.—This year's candidates for election to Minnesota's "Fifty Club" will be honor guests of the Association at the 91st Annual Banquet Friday, April 14, at 7:00 p.m. at the Rochester State Hospital.

Woman's Auxiliary.—Wives of physicians attending the meeting may secure programs of business sessions and social events arranged by the Woman's Auxiliary at the Women's Registration Desk in the Kahler Hotel. All visiting women are cordially invited to attend the special events arranged by the Hostesses of the Olmsted-Houston-Fillmore-Dodge County Society Auxiliary.

All-Alumni Get-Together.—University of Minnesota Alumni will hold their annual reunion at a cocktail hour to be held at 5:00 p.m., Thursday, April 13, at the University Club. All University Alumni are invited to attend.

Class Reunion.—The Class of 1906 will hold a luncheon reunion Thursday, April 13, at 12:15 p.m., in the Hotel Arthur.

Medical Women's Luncheon.—All members of the American Medical Women's Association are invited to a luncheon to be held Thursday noon, April 13, at a place to be designated later. Reservations should be made early with Della G. Drips, M.D., 102-110 Second Avenue S. W., Rochester, Minnesota.

SPECIAL SESSIONS

In addition to the General Sessions to be held on Thursday, Friday and Saturday morning in the Auditorium Theater, there will be three special sessions to be held on Thursday afternoon, and on Friday and Saturday mornings, respectively. The first of these will be in the Assembly Room of the Mayo Clinic; the second and third will be in the South Room of the Mayo Civic Auditorium as indicated below:

Thursday, April 13, 2:00 p.m.—The Minnesota Academy of Ophthalmology and Otolaryngology will sponsor a special program in the Assembly Room of the Mayo Clinic on Thursday at 2:00 p.m. This program will be open to all convention visitors.

Special clinics have been arranged in Rochester hospitals for Academy members only, at 8:00 a.m. on the same day, to be followed by a luncheon at the Carlton Hotel. Attendance at the luncheon is limited, also, to Academy members.

Friday, April 14, 9:00 a.m.—A special program on orthopedic and fracture surgery has been arranged for Friday morning, April 14. This program will be given in the South Room of the Auditorium and will recess from 10:15 a.m. to 11:00 a.m. at the same time as the General Session, so that those who attend may visit exhibits, demonstrations and the Scientific Cinema. All convention visitors are welcome to attend this session.

Saturday, April 15, 9:00 a.m.—The American College of Chest Physicians will sponsor a special session on chest diseases, Saturday, April 15, at 9:00 a.m. in the South Room. Several visiting chest physicians and surgeons will take part in this program which will be followed by a luncheon at the Carlton Hotel at which J. Winthrop Peabody, president of the College, will speak. This session, also, will recess from 10:15 to 11:00 a.m. to view exhibits, demonstrations and the Scientific Cinema. All convention visitors are welcome to attend.

Surgical Clinics.—A program of surgical clinics has been arranged in Rochester hospitals for Thursday, Friday and Saturday, April 13, 14 and 15.

Demonstrations.—A program of demonstrations has been arranged for each intermission period and immediately preceding each General Session on Friday and Saturday, April 14 and 15. These demonstrations will be held in Rooms S-7 and S-1 in the Auditorium Arena.

The first series in Room S-7 will be conducted under auspices of the Minnesota Radiological Society. It will consist of lantern slide demonstrations of x-ray diagnosis in a variety of conditions, a different demonstration being scheduled for each period. Members of the society will be present in person to give each demonstration.

The second series, to be given in Room S-1 in the Arena, will be on physical medicine with special reference to rehabilitation in industrial and war injuries, under the direction of F. H. Krusen and E. C. Elkins of Rochester. It will show, especially, procedures for rehabilitation of traumatic orthopedic and general medical conditions available to the general practitioner, including use of local heat, simple massage and corrective exercise. Technicians will be present to demonstrate all procedures.

SCIENTIFIC CINEMA

South Room

Thursday, April 13

A. M.
8:00—Substernal Adenoma — C. W. Mayo, Rochester
10:15—The Scleral Flap Cataract Operation
The Iris Inclusion Operation for Glaucoma
Muscle Recession for Convergent Strabismus
Charles Hymes, Minneapolis

P. M.
1:30—The Right to Hear
University of Iowa, College of Medicine
3:15—Clinic on Acute Mastoiditis
Medical Film Guild

Friday, April 14

A. M.
8:00—Colles' Fracture — H. W. Meyerding, Rochester
10:15—Venipuncture — J. S. Lundy, Rochester

P. M.
1:30—Segmental Resection of a Portion of the Stomach and Gastroenterostomy for Benign Gastric Ulcers
H. W. Walters, Rochester
3:15—Asphyxia Neonatorum — Medical Film Guild
5:00—Surgical Sutures Since Lister
Johnson & Johnson

Saturday, April 15

A. M.
8:00—Psoriasis — L. A. Brunsting, Rochester
10:15—One-stage Resection of the Right Colon with End to End Anastomosis
C. W. Mayo, Rochester

DEMONSTRATIONS

I. Phases of X-ray Diagnosis by Lantern Slides and Roentgenograms

Under the Auspices of the
Minnesota Radiological Society

Thursday, April 13—Room S-7

10:15-11:00 The Paranasal Sinuses
D. G. Pugh, Rochester
1:30- 2:00 The Diagnosis of Placenta Previa
W. H. Ude, Minneapolis
3:15- 4:00 Some Common Lesions of the Stomach and Duodenum
R. W. Morse, Minneapolis

Friday, April 14—Room S-7

8:00 - 9:00 A Comparison of Roentgen and Physical Findings in Cases with Extensive Lung Pathology
J. R. Aurelius, Saint Paul
10:15-11:00 Roentgen Examination of Fractures
C. N. Borman, Minneapolis
1:30- 2:00 The X-Ray Examination as an Aid to Obstetrical Diagnosis
C. A. Good, Rochester
3:15- 4:00 Myelography in the Diagnosis of the Herniated Intervertebral Disc
H. O. Peterson, Saint Paul

Saturday, April 15—Room S-7

8:00- 9:00 Differential Diagnosis of some Mediastinal Masses
A. T. Stenstrom, Minneapolis
10:15-11:00 The Roentgen Examination of the Colon — H. M. Weber, Rochester

II. Physical Medicine with Special Reference to Rehabilitation in Industrial and War Injuries

F. H. Krusen and E. C. Elkins, Rochester

Thursday, Friday, Saturday, April 13, 14, 15—Room S-1
(Time Schedule Same as for Demonstration I)

The purpose of this demonstration and exhibit is to present to the general practitioner through use of charts, apparatus and demonstration, simple procedures which may be used in the rehabilitation of traumatic orthopedic and general medical conditions. An attempt will be made to point out briefly the physiologic effects and indications for the use of procedures available to the general practitioner; e.g., use of local heat, simple movements of massage and corrective exercise and to present some of the commonly used simple procedures by demonstration.

SCIENTIFIC PROGRAM

Thursday, April 13

Section 1—General Session

A. M.
8:00 Demonstrations
Exhibits
Scientific Cinema
Surgical Clinics at Rochester Hospitals
9:00 **Peptic Ulcer**.....Auditorium Theater
Medical Management.....
J. A. Lepak, Saint Paul
Surgical Treatment..M. G. Gillespie, Duluth
Roentgenological Diagnosis.....
W. H. Ude, Minneapolis
Summary .....
O. H. Wangensteen, University of Minnesota

Intermission

10:15 Demonstrations
Exhibits
Scientific Cinema

11:00 **Anesthesia in General Practice**.....
Auditorium Theater
Indications for and Use of Local Anesthesia.....S. R. MAXEINER, Minneapolis
Intravenous Anesthesia.....
R. R. KNIGHT, University of Minnesota
Summary and General Considerations...
R. M. WATERS, Professor of Anesthesia, University of Wisconsin, Madison

Afternoon

P. M.
1:30 Demonstrations
Exhibits
Scientific Cinema
Surgical Clinics at Rochester Hospitals

2:00 **Mayo Foundation Lecture**.....
Auditorium Theater
Injuries to the Hand.....
SUMNER L. KOCH, Associate Professor of Surgery, Northwestern University, Chicago, Illinois

Intermission

3:15 Demonstrations, Exhibits, Scientific Cinema

4:00 **Russell D. Carman Memorial Lecture**...
Auditorium Theater
Roentgenolical Diagnosis of Skeletal Disease in Infants and Children.....
RALPH S. BROMER, Director, X-Ray Department, the Bryn Mawr Hospital, Bryn Mawr, Pa.

7:00 **Open House**.....Mayo Civic Auditorium

Thursday, April 13

Section 2—Special Session

A. M.
MINNESOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY
(Attendance limited to Members of the Academy)

8:00 **Surgical Clinics**
Ophthalmology and Otolarynology Clinic. 4th Floor, Worrall Hospital
Laryngology and Oral and Plastic Surgery Clinic.....11th Floor, Kahler Hospital

P. M.
12:30 **Luncheon**.....Carlton Hotel
(Attendance limited to Members of the Academy)

2:00 **Program**.....Assembly Room, Mayo Clinic
(Meeting open to all convention visitors)
Clinical Application of Cover Test and Prism Screening....H. P. JOHNSON, Rochester
Discussion .....A. D. PRANGEN, Rochester
Case Reports:
Spreading Osteomyelitis of the Maxilla
O. E. HALLBERG, Rochester
Frontal Osteomyelitis Secondary to Suppurative Frontal Sinusitis.....
R. J. D. WILLIAMSON, Rochester
Arnold's Nerve Reflex Cough.....
W. C. THORNELL, Rochester
Differential Diagnosis of Choked Disk and Optic Neuritis.....E. M. HAMMES, Rochester
Malignant Tumors of the Middle Ear and Mastoid.....F. A. FIGI, Rochester
Discussion.....B. E. HEMPSTEAD, Rochester

7:00 **Open House**.....Mayo Civic Auditorium

All convention visitors and their wives will be guests of the Olmsted-Houston-Fillmore-Dodge County Medical Society and the Minnesota State Medical Association at an Open House and Variety Show to be staged Thursday night at the Auditorium. Scientific and technical exhibits will be open for inspection at 7:00 p.m. At 8:30 p.m. a novel program of professional entertainment and music will begin on the stage of the Auditorium Theater. Everybody is welcome. No charge.

Friday, April 14

Section 1—General Session

A. M.
8:00 Demonstrations, Exhibits, Scientific Cinema, Surgical Clinics at Rochester Hospitals

9:00 **Pre-Operative and Postoperative Care for the Bad Risk Patient**.....
Auditorium Theater
General Aspects.....
CLARENCE DENNIS, University of Minnesota
In Infants.....E. S. PLATOU, Minneapolis
In the Aged.....O. I. SOHLBERG, Saint Paul
Summary and Discussion.....
R. W. MCNEALY, Associate Professor of Surgery Northwestern University, Chicago, Illinois

Intermission

10:15 Demonstrations, Exhibits, Scientific Cinema

11:00 **Current Problems in Obstetrical Practice**
Auditorium Theater
Responsibility of the Physician.....
J. H. MOORE, Chairman, North Dakota State Maternal Welfare Committee, Grand Forks, North Dakota
Control of Obstetrical Hemorrhage.....
R. A. REIS, Professor of Obstetrics and Gynecology, University of Illinois, Chicago, Illinois
Suggestions for Improvement.....
J. C. LITZENBERG, Minneapolis

P. M.
12:15 **Round Table Luncheons**
(See Section 2 for program)

Afternoon

1:30 Demonstrations, Exhibits, Scientific Cinema, Surgical Clinics at Rochester Hospitals

2:00 **Tropical Diseases**.....Auditorium Theater
Vice Admiral Ross T. McIntire
Surgeon General of the Navy.....
Washington, D. C.

Intermission

3:15 Demonstrations, Exhibits, Scientific Cinema

4:00 **Significance of Rheumatic Fever to the Community**.....Auditorium Theater
HUGH MCCULLOCH ..... St. Louis, Missouri
Professor of Clinical Pediatrics, Washington University School of Medicine.

5:00 **Scientific Cinema**

7:00 **Annual Banquet**....Rochester State Hospital
Presiding: L. A. BUIE, Rochester, President, Olmsted-Houston-Fillmore-Dodge County Medical Society
Introduction of MRS. A. J. BIANCO, Duluth, President, Woman's Auxiliary
Presentation of "Fifty Club" Certificates
Presentation of Southern Minnesota Medical Association Medal
President's Address: E. MENDELSSOHN JONES, Saint Paul, President, Minnesota State Medical Association
Address: VICE ADMIRAL ROSS T. MCINTIRE, Surgeon General of the Navy, Washington, D. C.

Friday, April 14

Section 2—Special Session

A. M.
8:00 Demonstrations, Exhibits, Scientific Cinema, Surgical Clinics at Rochester Hospitals.

9:00 **Orthopedic and Fracture Surgery**.....
South Room
R. C. WEBB, Minneapolis, Chairman
Total and Partial Excision of the Patella
H. H. YOUNG, Rochester
J. M. REGAN, Rochester

Treatment of Benign Bone Cysts with Pathological Fracture.....
J. F. POHL, Minneapolis
The Dual Bone Graft in the Treatment of Nonunion.....H. B. HALL, Minneapolis
Handling of Compound Fractures from Place of Injury to the Hospital.....
J. A. THABES, JR., Brainerd
Handling of Compound Fractures in the Hospital.....W. D. WHITE, Minneapolis

Intermission

10:15 Demonstrations, Exhibits, Scientific Cinema

11:00 **Orthopedic and Fracture Surgery** (continued) .....South Room
Fixed Osteotomies for Certain Conditions About the Hip Joint .....
C. C. CHATTERTON, Saint Paul
Experience with Fractures of Neck of the Femur and Intertrochanteric Region.....
J. H. MOE, Minneapolis
Use of the Brackett Operation in Nonunion of Fracture of the Neck of the Femur.....
R. K. GHORMLEY, Rochester

12:15 **Round Table Luncheons**
Newer Methods of Treating Syphilis: ....
P. A. O'LEARY, Rochester
Use of Drugs in Cardiac Emergencies ....
H. E. RICHARDSON, Saint Paul
Acute Appendicitis .. A. E. SOHMER, Mankato
Rheumatic Fever .... P. F. DWAN, Minneapolis
Anemias and Leukemias .....
C. J. WATSON, University of Minnesota
Poliomyelitis: the Kenny Treatment: ....
M. E. KNAPP, Minneapolis
Treatment of Sterility: .. J. R. MANLEY, Duluth
Differential Diagnosis of Breast Tumors:...
A. R. COLVIN, Saint Paul

Saturday, April 15

Section 1—General Session

A. M.
8:00 Demonstrations, Exhibits, Scientific Cinema, Surgical Clinics at Rochester Hospitals.

9:00 **Diseases of the Colon**...Auditorium Theater
Illustrated with Endoscopic Motion Pictures in Color of Lesions of the Terminal Portion of the Colon .... L. A. BUIE, Rochester
N. D. SMITH, Rochester
R. J. JACKMAN, Rochester

Intermission

10:15 Demonstrations, Exhibits, Scientific Cinema

11:00 **Chemotherapy** .....Auditorium Theater
The Sulfonamides:
General Considerations.....
A. E. BROWN, Rochester
Clinical Application .....
J. M. STICKNEY, Rochester
Penicillin.....W. E. HERRELL, Rochester
Summary .....
W. W. SPINK, University of Minnesota

Saturday, April 15

Section 2—Special Session

AMERICAN COLLEGE OF CHEST PHYSICIANS

A. M.
9:00 **Diseases of the Chest**.....South Room
Practical Points in the Diagnosis of Pulmonary Tuberculosis.....
S. A. SLATER, Worthington
Development of Therapy in Tuberculosis During the Last Twenty-five Years .....
J. F. ALLEN, Professor of Clinical Medicine University of Nebraska, Omaha, Nebraska
Present Status of Chemotherapy in Tuberculosis.....H. C. HINSHAW, Rochester

10:15 Intermission

11:00 **Diseases of the Chest** (continued).....
South Room
All-out Tuberculosis Control by Medical Profession.....K. A. DANIELSON, Litchfield
Sarcoidosis .... W. L. MEYER, Medical Director South Dakota State Sanatorium, Sanator, S. D.
Case Reports .. L. W. MOODY, Medical Director Pureair Sanatorium, Bayfield, Wis.

12:15 **Luncheon**.....Carlton Hotel
Address: J. W. PEABODY, President, American College of Chest Physicians.....
Washington, D. C.

SCIENTIFIC EXHIBITS

American Medical Association
Botulism
Malaria

American Red Cross: Olmsted County Chapter
G. P. SHERIDAN, Chairman, Rochester

Committee on Conservation of Hearing
HORACE NEWHART, Chairman, Minneapolis

Committee on Tuberculosis
J. A. MYERS, Chairman, Minneapolis
The Laboratory Diagnosis of Tuberculosis
A. H. SANFORD and G. J. THOMPSON, Rochester
Chemotherapy of Tuberculosis
W. H. FELDMAN, F. C. MANN, and H. C. HINSHAW, Rochester

Mayo Clinic and Mayo Foundation
Technique of Venipuncture and Parenteral Therapy
J. S. LUNDY, R. C. ADAMS, and T. H. SELDON
Pedicle Grafts to Deep Skin Defects of the Foot and Ankle
R. K. GHORMLEY
Benign and Malignant Tumors of Bone
H. W. MEYERDING

Minnesota Hospital Service Association
A. M. CALVIN, Executive Director, Saint Paul

Minnesota Public Health Association
E. A. MEYERDING, Executive Secretary, Saint Paul

Minnesota Society for the Control of Cancer
MRS. S. E. LINSLEY, Executive Secretary, Saint Paul

Minnesota Society for the Prevention of Blindness
DOROTHY H. HAMILTON, Executive Secretary, Saint Paul

Minnesota State Department of Health
A. J. CHESLEY, Secretary and Executive Officer, Saint Paul

Production of Negative Pressure in the Respiratory Tract by Ciliary Action: Relation to Atelectasis
ANDERSON HILDING, Duluth

University of Minnesota
Pernicious Anemia, Benign Polyps and Carcinoma of the Stomach
L. G. RIGLER, H. L. KAPLAN, and CAPTAIN DANIEL FINK

Woman's Auxiliary to the Minnesota State Medical Association
MRS. F. S. McKINNEY, President, Minneapolis

Minnesota Academy of Medicine

Meeting of February 9, 1944

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minneapolis Club on Wednesday evening, February 9, 1944. Dinner was served at 7 o'clock and the meeting was called to order at 8:35 by the President, Dr. Walter E. Camp.

There were fifty-seven members and two guests present.

Minutes of the January meeting were read and approved.

The scientific program followed.

Dr. Harold S. Diehl, Dean of the Medical Sciences, of the medical School, University of Minnesota, prefaced the reading of his Inaugural Thesis with the following remarks:

Members of the Minnesota Academy of Medicine! I want to express to you my appreciation of the honor you have bestowed upon me in electing me a member of this Academy. I also appreciate your consideration in permitting me to postpone this thesis for several years, during which time I have been more or less snowed under with many things.

Many whom I see here this evening I have counted among my close friends for many years. The others I hope to include in the same group as a consequence of my associations in this organization. In my professional capacity, also, I am glad for the opportunities which membership in this Academy will give me for intimate association with all of you. I say this because the Medical School of the University of Minnesota represents the medical profession of Minnesota before the nation and the world. In so doing, it reflects either credit or discredit upon each of you. It is our hope that it will always be the kind of medical school of which you can be proud.

PROBLEMS OF POSTWAR MEDICAL EDUCATION

HAROLD S. DIEHL, M.D.
Minneapolis, Minnesota

In the decade before the war medical education in this country reached a standard of excellence hardly dreamed of a generation ago. Teaching staffs were stronger and facilities more adequate than ever before. Entrance requirements were raised, curricula revised and expanded. Students admitted to medical schools were carefully selected from large numbers of potentially qualified applicants. The result of all this, presumably at least, has been that our medical graduates as a group are better qualified than ever before to undertake the practice of medicine.

With the war changes in medical education were inevitable. Premedical requirements have been reduced from three or four years to two years of college work. The medical course proper has been accelerated by the elimination of summer vacations, thereby concentrating the work of four academic years into three calendar years. The number of students accepted for admission to medical schools has been increased by approximately 10 per cent. New courses in first aid, tropical medicine and war medicine have been introduced into the curriculum and special emphasis in regular courses has been given to such medical problems of the war as shock, hemorrhage, fractures, communicable disease control, sanitation and aviation medicine.

In postwar America the status of medical education will depend primarily upon the conditions existing in our country at that time. If we should lose the war or if our enemies are able to force a stalemate, we can anticipate either complete regimentation or continuation of our country as a vast armed camp. In either case the pattern of medical education will be determined not by medical educators or by the medical profession but by government itself.

Assuming, on the other hand, that we will be victorious, the termination of the war will require decisions as to whether these changes in medical and premedical education shall be continued. Most of them were considered undesirable when introduced and were accepted with reluctance by medical educators. Hence, there is certain to be much sentiment to return immediately and completely to the prewar program of medical education. This program was developed on the basis of long experience and critical evaluation and was considered reasonably sound and adequate. Certainly such a program should be accepted as at least the framework of the medical education of the future.

Yet to return blindly to a pattern of the past is to close our eyes to the possibility of improvement by breaking with tradition. Wartime experience with the accelerated curriculum and reduced entrance requirements should be carefully evaluated and considered in postwar planning. It is quite possible that some of the changes in medical education which have been made as adjustments to wartime conditions may have merit also for peacetime. There has, for example, long been con-

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cern over the increasing age of graduates from medical schools. With three or four years of college work preparatory to the study of medicine, four years in medical school and one to two years of internship, most physicians are between 27 and 28 years of age before they are ready to begin independent professional work. Add to this several years to establish a practice or three to five years of graduate training and such physicians are 30 years old before they are in a position to establish a home or to start the practice of a specialty. Perhaps the pendulum has swung too far in the direction of the prolongation of undergraduate medical training.

Medical education has never been static. Hence, it is probable that the postwar period will bring forth certain modifications in the program based upon wartime experience. These modifications are likely to be in the direction of more attention to the adjustment of teaching loads to available staff and facilities; continuation of a certain amount of acceleration; further trends from didactic to laboratory and clinical teaching; and more emphasis upon preventive medicine in its broadest aspects such as nutrition, healthful living, geriatrics, and industrial hygiene, as well as the prevention and control of communicable diseases.

Size of Medical Classes

In the early years of medical education in this country the number of students was limited only by the number of applicants and by their ability to pay the required fees. At one time 162 medical schools existed and more were organized whenever there were prospects of additional students. Establishment of standards of accrediting for medical schools and the reduction of their number to 66 medical schools and 10 schools of basic medical sciences caused a great reduction in the number of graduates.

At one time prior to the accrediting of medical schools the annual number of graduates reached 5747. This was in 1904 when the total population of the country was approximately 84,000,000. With the elimination of substandard schools a rapid decline in the number of medical graduates occurred, reaching a low of 2520 in 1922. Subsequent to that date the number of graduates has gradually increased to approximately 5,200 per year in the several years before the war. This is almost 50 per cent more than the number of physicians who die each year and represents an annual net increase of 1600 to 1800 physicians for the country as a whole, a rate of increase among physicians in excess of that among the general population. Furthermore, at the beginning of the war the United States had the highest ratio of physicians to population of any country in the world. The accompanying table shows the pre-war population per physician in countries with the better developed medical facilities.

The accelerated medical course and the increase in the size of classes will produce about 7,500 graduates annually. This is approximately double the number of deaths among physicians in recent years. The war will doubtless cause an increase in the death rate among physicians, but even allowing for this, the accelerated program of medical education should provide a sufficient

POPULATION PER PHYSICIAN IN VARIOUS COUNTRIES[2]

United States	1,750
Austria	1,880
Switzerland	1,250
Denmark	1,430
England and Wales	1,490
Germany	1,560
France	1,690
Norway	1,760
The Netherlands	1,820
Belgium	1,850
Sweden	2,890

number of physicians to meet the needs of both the armed forces and the civilian population at the close of the war. Whether the number of medical students in training should then be immediately reduced is dependent upon several factors at present unpredictable. Among these are: (1) the number of physicians who will be killed or disabled during the war; (2) the number who will be retained in the armed forces or other governmental agencies for domestic and foreign service; and (3) the postwar need, demand, facilities, and organization for the provision of medical services to the civilian population.

It is clear, however, that in the interest both of sound medical education and of good medical care, medical schools should appraise their situations and reduce the size of their student bodies to the number that can be properly trained with available staff and facilities. Unfortunately, some of the large increases in the number of students accepted for training during the war have been in medical schools with relatively meager facilities. Such situations should be corrected without delay.

Selection of Medical Students

In recent years the number of applicants for admission to medical schools has been more than twice the number of students accepted. This has made selection possible and doubtless has resulted in a higher average level of ability among medical students than existed prior to such selection. Even so most medical schools accept the last 20 to 25 per cent of students with distinct reservations as to their qualifications, intellectual or personal, for the study or practice of medicine. If possible, this lowest fourth should be replaced by students of greater promise.

There is some opinion that the cost of medical education prevents many able students from undertaking it. This may be true. Yet, the large proportion of medical students who are wholly or partially self-supporting indicates that at least for many, with sufficient ability and determination to secure a medical education, the financial difficulties are not insurmountable. On the other hand, the lack of funds doubtless deters some from undertaking the study of medicine and handicaps others in securing a medical education.

Under the Army and Navy College Training Programs economic considerations are completely removed, both as factors in determining who shall study medicine and as handicaps in medical school to students with limited resources. This represents an important educational experiment, the results of which should be carefully evaluated. If it appears that as a result of this subsidy appreciable numbers of superior students are enabled to undertake the study of medicine and if these

and other students with limited financial resources receive better medical educations because they are able to devote their time and energies undividedly to their studies, then it would seem in the public interest that more adequate loan or scholarship funds should be made available to aid medical students in the postwar era.

Premedical Education

For a number of years before the war practically all medical schools required three or four years of premedical college training as a prerequisite for admission, and 98 per cent of the students admitted to medical schools in 1941 had completed three or more years of college work. The purpose of premedical requirements is to provide medical students with a sound foundation in the sciences upon which medicine is based, a familiarity with the social sciences concerned with human relationships, an ability to use the English and at least one foreign language and an acquaintance with other fields which contribute to a liberal education.

In 1825, in answer to objections to establishing the medical school of the University of Virginia at Charlottesville instead of at Richmond where facilities for clinical instruction were more adequate, Thomas Jefferson stated that the chief aim of this medical school—"at first, was not to give a professional education, but simply instruction in a branch of liberal culture which every accomplished gentleman was presumed to have studied."[1] Most medical educators do not go as far as Thomas Jefferson in this regard but they are anxious that physicians should have a reasonably good general education; meaning thereby "those nonspecialized and nonvocational phases of education that should be the common possession of educated people in a democratic society."[4]

The reduction of the premedical course to two years of college work has necessitated the elimination of some desirable science courses and most of the opportunities to become acquainted with other fields of knowledge. These opportunities should be restored at the earliest possible moment.

However, consideration of the several groups of students who will be desirous of preparing for the study of medicine immediately after the war would seem to make gradual return to a longer premedical course desirable. Students from high school could well be required to meet normal peacetime requirements. On the other hand, students who have served for some time in the armed forces will be older, anxious to begin their professional studies, and impatient of prolonged premedical preparation. For them the curtailed wartime requirements might well be considered acceptable. Students who at the close of the war will have partially completed their premedical requirements under the Army or Navy College Training Programs will constitute an intermediate group.

Acceleration

Under the shorter premedical program students start upon the study of medicine a year or two younger than would otherwise be possible. Many feel that such students will be lacking in the intellectual maturity, the educational background and the sound judgment, so important for the study of medicine. Yet the adding of one or possibly even two or three years to the professional life of most physicians is no small consideration. Thirty-five years ago President Lowell of Harvard wrote, "With the long period of special training now required in every profession, there is a universal cry that men are beginning their careers in life too old, and that the period of education is too long. Disease and death are not postponed because a man starts upon the practice of his profession a year or two later than is necessary. His period of active life, his achievements and his usefulness are simply curtailed to that extent."[3] Over the years discussion of this problem has continued; but instead of a reduction there has been an increase in the age of graduation from medical school.

The possibility of saving time in premedical college preparation has been mentioned. The wisdom of much reduction here seems dubious; but there are definite possibilities of saving valuable years in the elementary and secondary schools. For superior students the lock-step of most elementary and secondary education is not only unnecessary but actually inimical to initiative and serious scholarship. Furthermore, much of the work of the last two years of high school is repeated during the first year in college. It would seem, therefore, that for many students, at least one or two years could be saved by acceleration in the elementary and secondary schools and by telescoping the last year of high school with the first year of college.

The question of immaturity on the part of such accelerated students doubtless has some validity. There is, however, no evidence that the learning capacity of an individual is greater from twenty-one to twenty-five years of age than it is from eighteen to twenty-two, and there is abundant evidence that young people of ability mature rapidly under responsibility and challenging purposeful work.[5] Sound judgment in medical matters is developed by clinical experience on the wards of hospitals or in medical practice, not by spending unnecessary years in elementary and secondary schools.

The accelerated medical curriculum, with the elimination of summer vacations and the acceptance of new classes at nine month intervals, was adopted for the duration of the war in order to graduate physicians earlier and in larger numbers for service in the armed forces. These demands will taper off with the cessations of hostilities. Therefore, unless there are needs for large numbers of physicians which cannot now be foreseen, most medical schools probably should and will return promptly to the annual admission of new classes. This is necessary if the medical faculties are to have time for the scientific and scholarly work which is the foundation of modern medical education.

With an annual admission of students and a reduction in enrollment, the annual number of medical graduates will be reduced and stabilized whether or not the acceleration of the medical course proper is continued.

The chief argument in favor of the continuation of the accelerated program in the medical school is that it permits students to graduate a year earlier than would otherwise be possible, thereby making available to them

an extra year for graduate study or for the practice of their profession.

Against continued acceleration the major arguments are that many students need the summer vacations to earn money toward the expenses of the ensuing year; that some students pursue additional studies during the summer months which contribute materially to their medical education; and that the students and faculty need vacations during the summer months.

Probably the first is the most valid of these arguments. Many students utilize the summer months to earn money for their next year's tuition. Yet the amount of money which the average student earns during three summer vacations, approximately $600.00 at the University of Minnesota, is small compensation for a year out of his professional life. If adequate loan funds or scholarships could be made available to students who need them, it would be preferable, even from an economic point of view, if medical students were able to accelerate their courses of study and graduate in the shortest possible time. Of greater significance is the additional year of service which graduates under the accelerated program can render to society.

The work that some students engage in during summer vacations undoubtedly contributes to their medical education, but the proportion of students who profit professionally by the work done during vacations is too small to provide a strong argument for continuation of the long summer holidays.

The argument that students and faculty members need vacations of three or four months during the summer is open to question. Even under the accelerated curriculum students have four to six weeks of vacation annually, and if classes are admitted only once a year, the faculty will have no more teaching under the accelerated program than under the normal curriculum.

Postwar Support of Medical Education

Financial limitations make it practically impossible for certain medical schools to conduct a truly first-class program of medical education. Some of these schools have attempted to increase their budgets by admitting excessive numbers of students. This is truly "selling the birthright" of medical education "for a mess of potage."

The late President Lotus D. Coffman of the University of Minnesota said that "there are certain things in life for which we pay whether we get them or not." He was referring to general education, but his statement is even more applicable to medical education. If medical education is not adequately supported, the public will receive inferior medical care and will pay for this in terms of unnecessary illnesses and even life itself.

This public must be made to realize that one of the fundamental requirements for a sound program of medical education is adequate financial support and that less than this is not economy but tragic shortsightedness.

The Instructional Program

Few, if any, changes in the medical curriculum or in instructional methods have been made in connection with the accelerated program. In this medical schools have followed the line of least resistance. As such, it probably is the one which will be followed by most schools in making their readjustments to a peacetime basis. On the other hand, periods of stress offer unique opportunities to make changes or readjustments which are difficult in normal times.

In most medical schools the curriculum has become overcrowded and rigid. Yet, new developments, and even some new fields, such as physical medicine and social medicine, must be presented if our graduates are to be prepared to deal with the medical problems of the future. In one of the large clinics of this country 10 per cent of all patients are referred to the division of physical medicine; a field in which few medical schools provide any instruction worthy of the name.

Social medicine has two connotations. One is sometimes called the "social component" of medicine: that is, the social, environmental and economic factors related to the patient's illness or recovery. Increasing attention is being given in medical schools to this field. The other connotation concerns the relationship of the physician and the medical profession to the society which they serve. It is apparent that this society is becoming increasingly interested in the distribution of medical services. To direct this interest to the benefit of all concerned it is essential that the medical profession understand the issues, the proposals and the plans and exhibit constructive leadership in this field.

These and other subjects we would like to present to our medical students but, unfortunately, there is no time for them in the curriculum. Each professor so thoroughly appreciates the importance of his own subject that he feels that he should have more time, not less, in which to present it.

If the medical curriculum is to be kept in balance with developments in medical science and medical practice, reappraisal of both the curriculum and instructional methods must be made from time to time. Possibly the time given to some subjects should be curtailed and that given to others extended. The postwar period offers a rare opportunity to make such reappraisals and readjustments. May the medical schools have the vision, the courage and the wisdom to take advantage of these opportunities.

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Discussion

DR. C. B. DRAKE, Saint Paul: One point which Dr. Diehl touched upon is the division of the school year between study and vacation. A boy of mine graduated recently from a medical school in New York City. He worked at high pitch for eight months and loafed for four each year. While I am not in favor of continuing the present procedure of condensing the usual four years' work into three, it seems to me that the months

of study could be extended so they would be less strenuous and the vacation periods correspondingly reduced to the benefit of the health of the medical students. I don't know the figures, but too many of our medical students still come down with tuberculosis before they are through their undergraduate and hospital training.

Dr. H. B. Zimmermann, Saint Paul: I would like to express my appreciation to Dr. Diehl for having presented this very important paper.

One thing that interested me very much was Dr. Diehl's suggestion that there be some teaching in medical school on the doctor's relationship to society. I have often thought this was an extremely important subject. I don't know just where or at what period in the medical curriculum such a course could be offered, but, inasmuch as we hear so much today with reference to distribution of medical care, it seems to me that the doctor himself should have some concept of the matter.

Dr. A. M. Snell, Rochester: There will probably be two groups of persons returning after this war that will constitute a problem for the medical schools. One group is composed of men who have completed the preliminaries of a medical education or have worked in some closely allied field and after joining the forces have picked up considerable practical medical education in the field by a sort of preceptorial system. They are going to require special handling, for some of them have great promise and a great desire to complete a medical course. The second group of persons is often forgotten in considerations of this type. They are the medical men who want further training in refresher courses or postgraduate work after the war. There are hundreds of men in overseas units who are almost completely out of touch with the practice of medicine in general and their respective specialties in particular. So far as I know, the existing graduate medical schools have scarcely enough facilities to provide all of them with the opportunities they want and need, and it appears that they will have to depend on the undergraduate schools to make provision for them.

Dr. A. W. Adson, Rochester: I arise to inquire whether or not Dr. Diehl has considered the advisability of permitting medical students in their junior year to take apprenticeships of three months under a preceptor who could be a general practitioner of medicine or one who has a small clinic in a rural community, in order to acquaint medical students with the problems of general practice. The University of Wisconsin has such a plan, and it appears to be useful in stimulating young doctors to locate in rural communities where medical needs appear to be greater than they are in urban centers.

Dr. Hendrie W. Grant, Saint Paul: One of my nephews, who is now a student at Harvard Medical School, said that only six boys from a certain group were not the sons of physicians.

I have wondered what the possibilities are for young individuals becoming students in the Medical School at the present time. I think this is a problem that concerns the future physicians of America and will be very pleased if Doctor Diehl would state the methods which are used by the Army, Navy and the Medical School in filling their quota for future students.

Dr. S. E. Sweitzer, Minneapolis: In the acceleration program at the University of Chicago they aim to get students through the university before the age they have been accustomed to get through. Another thing is that practically all the specialists have to take about three years' training which makes the specialists start their careers rather late. If these courses are speeded up, these boys could start their careers, start families, and become useful citizens much earlier than they are doing now. Of these men coming back from the war, some will want to start their medical education and must be taken care of.

Regarding these refresher courses, I don't think much of them. If these men get a few weeks' training, are they going to become specialists? We should either have well-trained specialists or none at all.

Dr. W. L. Benedict, Rochester: Dr. Diehl's paper has more to do with instruction given in the regular medical course. However, he spoke of the postwar problems of instruction in medicine for those who wish to take up specialties. With only 66 medical schools in the country, I should like to know what Dr. Diehl thinks about increasing the number of medical schools and also increasing their capacity to take care of a greater number of students. Also, I would like to know what he thinks of augmenting the faculty in graduate instruction by having other hospitals within the state associated with the university hospital as is recommended in the Michigan plan.

Dr. H. Z. Giffin, Rochester: Just a technical question with regard to Procurement and Assignment. If a student is a premedical student and has not been accepted by an accredited medical school, is the Appeal Board at liberty to defer such a student?

Dr. J. B. Carey, Minneapolis: I should like to have Dr. Diehl elaborate on the third point which he made. What is being done about orienting the students toward the present social trends? I think that is just as important at the present time as the education to compensate for their military service.

Dr. Diehl, in closing: I wish I had all the answers to the questions asked.

As to Dr. Drake's question concerning the advisability of vacation periods of four months each year: that was one of the questions which I raised in my paper. I think there are very good arguments for students spending ten or ten and a half months, instead of only eight or nine, out of each year in medical school. In my judgment, the time saved is infinitely more valuable than a long vacation each summer. As to the danger of students breaking down physically, I do not know of any evidence that this is a real danger. Some students break down from causes other than overwork. The tuberculosis is due more to lack of adequate safeguards in their clinical experience than to the amount of work they do.

Dr. Zimmermann asked what is being done or can be done to acquaint students with the place of physicians in society? We have a course for senior students, established about eight years ago, called "Orientation to Practice." This includes discussions, for the most part by men who are in practice, of the various relationships of the doctor to the community and to his patients. This course is a beginning, but only a beginning, in that field. We should go farther in developing discussions for student groups on these problems.

In regard to Dr. Snell's questions concerning the return to the medical school of men who have dropped out of school to go into service: There are, I am sure, very few of those. Doubtless more have dropped out of the premedical courses. Special provision will need to be made to get these men back into medicine in a manner that will be satisfactory to them.

The doctors who after the war will want opportunities for graduate work raise a very real problem but one which I did not even attempt to discuss this evening. There are at least 12,000 physicians in military service who have gone directly into military service from

their hospital service. A great many of these will want and need graduate training or refresher courses before establishing themselves in regular practice.

Dr. Grant's question concerned the sons of physicians who study medicine. There is obviously a special reason for sons of physicians to be interested in studying medicine but the percentage in medical schools is not excessive. I was wondering recently how well physicians' sons do in medical school in comparison with other boys. It seems to us at times that it is the physicians' sons who most frequently get into scholastic difficulties. So a few days ago I asked my secretary to list, according to occupations of their parents, the ten top-ranking students and the ten lowest-ranking students in the last five classes to graduate at Minnesota. There were physicians' sons in both groups, but a few more in the ten top than in the ten lowest. That at least does not sound too bad for physicians' sons in medicine. There are, of course, sons of physicians who never would attempt medical educations except for the influence of their families. Some of them say, "I don't know whether I am really interested in medicine but I don't want to disappoint dad."

Relative to the boy who wishes to study medicine and is eighteen years old or becomes eighteen this year: If he is physically qualified for military service the only way he can possibly hope to study medicine is under the Army or Navy College Training Program. Beginning with January 1, 1945, all medical schools are under contract to fill 25 per cent of places in each entering class with students assigned from the Navy's V-12 program and 55 per cent with students from the Army's Specialized Training Program. This leaves only 20 per cent of the places for civilian students; and it is intended that these places be filled by women and men ineligible for military service.†

In order to get into the Army or Navy training programs, the first requirement is that the boy must take the Army-Navy qualifying (so-called A-12) examination. This is given in colleges and high schools throughout the country several times each year. If he makes a satisfactory score on that examination, he is considered qualified for the training program. When he applies for the examination he must indicate whether he prefers the Army or the Navy program. If he chooses the Navy, passes the qualifying examination, and is selected for appointment, he will be fitted into the V-12 program, in accord with the amount of previous premedical work he has had. The Navy Program consists of five terms of fifteen weeks each. The first two terms are basic chemistry, physics, mathematics, etc. During those two terms a "screening" of the students is made; those who want to go into medicine being examined by a committee of the deans of the medical schools. The Navy officers are the only ones who have authority to make actual selections but they follow the recommendations of the deans. The students thus selected to continue with premedical work proceed with the next three terms and those who make the best records will be assigned to medical schools. Students are permitted to indicate what medical school they would like to attend: listing first, second and third choices. The Navy will attempt to follow these choices but does not guarantee to do so.

The Army Program is a little different in that the student must take basic military training for thirteen weeks at the end of the first term after his eighteenth birthday. If he makes a good record during that training, and is qualified under the tests he has taken, then he will be assigned for the A.S.T. Program. The Army scholastic program is similar to that of the Navy except that the terms are twelve weeks instead of fifteen weeks in length. Screening processes are similar.

Dr. John M. Armstrong, Saint Paul: Supposing a boy has a deformity, say one leg is shorter than the other, so that he is disqualified for service; can he get into a medical school?

Dr. Diehl: Yes, we have saved 20 per cent of the places for those who are ineligible for military service.

In answer to Dr. Adson's question about getting students into local rural communities: We are aware of the need but do not know what we can do about it. Has the Wisconsin plan had this desired effect?

Dr. Adson: Yes, I think that the Wisconsin plan has been effective, since I have had the privilege of visiting with several of these medical students who have been serving their apprenticeships. The ones I have talked with are those who have been assigned to the Midelfart and Gunderson Clinics, located respectively in Eau Claire and La Crosse, Wisconsin.

Dr. Diehl: I am familiar with that plan and consider it an interesting experiment. They made their senior year twelve months in length and assigned the senior students for three-months periods to selected doctors around the state who acted as preceptors.

In regard to Dr. Sweitzer's question about the University of Chicago plan: President Hutchins has been interested in getting students into college and through their basic general educations at an earlier age. As I stated in my paper, I feel that there is much to be said in favor of such acceleration. One reason that the Chicago experiment has created so much furor in the educational field is that they propose to give students Bachelor of Arts degrees at the end of two years of college work. That was the part of the program that aroused most discussion in educational circles. The Medical School of the University of Chicago conducted a year-round program before the war; making it possible for students to go to school contiuously if they wished. I asked the Dean if many completed their medical training in three years. He said "No, not many, because the medical licensing laws in Illinois require that students be in school for four years."

In regard to Dr. Benedict's question about increasing the number of medical schools or the number of students in existing schools: I personally do not see at the present time any convincing evidence that the postwar needs for physicians will make it necessary to train more physicians than are being trained at the present time. The annual pre-war rate of increase among physicians was considerably greater than the increase in the general population. If we have more medical schools or larger classes we may have more physicians than society can absorb. As to larger classes, in my judgment some schools are accepting more students now than they should. This results in a definite reduction in the quality of training. Such schools should reduce their enrollments. The number of four-year medical schools has recently been increased by two: the University of Utah which formerly had only the first two years of medicine now has a complete four-year course; and a new school, called the Southwestern Medical School, has been established at Dallas, Texas. There is also talk about establishing a new school in Alabama and one in Florida. I feel, however, that the establishment of more medical schools should be discouraged rather than encouraged. We should attempt to make the ones we have better rather than establish more mediocre ones.

Plans and programs for graduate medical training must be revised if we are to provide opportunities for the men who want such courses after the war. One possibility is for hospitals, that have facilities and staff members qualified to give graduate training, to arrange

†In the interim between this discussion and its publication the Army has curtailed its training program to such an extent that it appears that only about 25 per cent of the places in future entering classes will be filled by Army students. This will leave about 30 per cent of the places in each class for students who may be deferred by Selective Service.

affiliations with medical schools for the conduct of such training.

One aspect of graduate and postgraduate medical education that has not received adequate consideration is the necessity to provide additional staff members to assist with these programs. Funds are needed for these programs just as for undergraduate medical education. The usual idea is that medical schools should take this on with little or no increase in the staff. The University of Pennsylvania has a separate postgraduate school which offers a year's training in basic sciences such as physiology, anatomy, pathology, after which students arrange to go to some hospital which is acceptable to the University of Pennsylvania for their clinical experience. Their program is financed, principally by the tuition fees of $800 per year. It is time that we realize that it is going to be necessary to provide special facilities and staffs in the medical schools in order to offer the graduate and postgraduate medical training which is essential for the maintenance of a high level of medical practice in this country.

In answer to Dr. Giffin's question: Premedical students are not eligible for deferment unless they have been accepted for admission to medical school.

Dr. Carey asked what is being done concerning the orientation of students in social aspects of medicine. I mentioned that in my paper as one of the things we ought to do but are not yet doing. To begin with, an elective course on the social and economic problems of medicine should be set up so that students who are interested will have some background for leadership in these fields when they get out into the practice of medicine.

The meeting adjourned.

Erling W. Hansen, M.D.
Secretary.

WOMAN'S AUXILIARY

Mrs. F. S. McKinney, *President*
Minneapolis, Minnesota
Mrs. W. H. Rucker, *Editor*
Minneapolis, Minnesota

KANDIYOHI-SWIFT-MEEKER COUNTIES

Kandiyohi-Swift-Meeker County Medical Auxiliary was reorganized at a meeting held Wednesday evening, March 15, at the home of Mrs. Richard E. Anderson in Willmar.

Mrs. F. S. McKinney, state president, was a guest of the doctors and their wives at a dinner preceding the meeting, and later, assisted the women in forming their new organization.

Fifteen members were enrolled and the officers elected were: Mrs. Hans Johnson, Kerkhoven, president; Mrs. F. P. Frisch, Willmar, first vice president; Mrs. R. J. Hodapt, Willmar, secretary; Mrs. Richard E. Anderson, Willmar, treasurer. Committee chairmen are:

Publicity—Mrs. D. L. Jacobs, Willmar; Emergency Nursing—Mrs. A. S. Branton, Willmar; Medical and Surgical Relief—Mrs. R. J. Ripple, New London.

The group decided on the making of cancer dressings as a project for their next meeting. Congratulations and best wishes to you all!

HENNEPIN COUNTY

Friday, March 3, the auxiliary held a public relations meeting in the form of an all-day Health Institute. Presidents of all Minneapolis organizations including clubs, P.T.A.'s, and labor union auxiliaries, were invited. They came—three hundred strong.

Mrs. Harold Wahlquist presided at the morning session which was opened by Dr. W. A. O'Brien, who spoke on "Tropical Diseases, a Postwar Problem."

A Walt Disney film "Defense of Invasion," one entitled "Fight Syphilis" prepared by the U. S. Public Health Service, and "Fighting Tuberculosis in Hennepin County" a color picture based on Hennepin county tuberculosis control program followed.

The morning program was concluded with a talk by Marguerite Ridler, Director of Social Service at Glen Lake Sanitorium.

A brief noon recess for a box lunch divided the two sessions, after which Mrs. Russell Morse, afternoon chairman, introduced Dr. W. C. Alvarez of Rochester who spoke on "Why Women are Nervous."

Dr. E. J. Huenekens then discussed causes of rejection of eighteen- and nineteen-year-old boys from Army and Navy and how these conditions could have been prevented.

Frank Hertel, executive secretary of the Minneapolis Family Welfare association then explained the free and part-pay medical services available to residents of Minneapolis and Hennepin County.

Mrs. T. M. Olson of Elk River, commander of the Minnesota Society for Control of Cancer, revealed the lay problems in cancer control.

The day's program was very ably concluded by Dr. Stephen H. Baxter, past president of Hennepin County Medical Society, who informed the assembly of some of the hidden facts of the Wagner-Murray-Dingell Bill.

Transactions of the Minneapolis Surgical Society

Meeting of December 4, 1943

The regular monthly meeting of the Minneapolis Surgical Society was held on Thursday, December 2, 1943, in the Hennepin County Club Room at 8:00 p.m. The meeting was opened by the President, Dr. H. O. McPheeters and sixteen members were present.

The following papers were read:

1. "Herniation of Intervetrebral Disc," by Dr. William Peyton. Discussion by Drs. G. R. Dunn, Roscoe Webb, Robert McGandy, and John Moe. (Published on Page 263, this issue.)

2. "X-ray Diagnosis of Intervertebral Disc" by Dr. Harold Peterson by invitation.

The meeting was closed by the President.

Respectfully submitted,
J. M. Feeney, *Secretary.*

In Memoriam

ARNOLD SCHWYZER, M.D.

Dr. Arnold Schwyzer was born May 23, 1864, in Zurich, Switzerland, of Swiss parentage. His father was a businessman and held the rank of Colonel Brigadier in the Swiss Army. He spent six and one-half years in the Zurich gymnasium (college). From



Arnold Schwyzer

boyhood he longed to become a physician. After leaving the gymnasium, he took his basic medical science in Geneva, in the French language, where he passed the "propaedeutic medical examination." After this he had three years of clinical medicine at the Zurich University in the German language, and graduated in March, 1888, carrying the honor of being the highest in his class. Then he became a Lieutenant, as Swiss Army Surgeon. He made a short stay during student days in Italy and at the Royal Infirmary in Edinburgh to learn Italian and English somewhat.

For a short time he substituted as assistant at Kroenlein's Surgical Clinic. Then he prepared a Thesis for Doctor of Medicine under Professor Dr. O. Haab, Professor of Ophthalmology in Zurich. For one year he was assistant in the County Hospital of Glarus under Dr. Fritzsche, chief physician and surgeon. Then he became third, then second, and finally chief assistant of the gynecological and obstetrical clinic of the University of Zurich.

It was here that the unfolding of his genius became manifest. His medical reports and credentials all registered in the superlatives. The equivalent in our language would be "excellent." This covered the various fields of medicine, such as Ophthalmology, Pediatrics, Orthopedics, Public Health, Pathology, Gynecology and Surgery. He possessed a compilation of all these credentials, reports, and diplomas and it was the author's privilege a short time before Dr. Schwyzer's passing to see this compilation. He said to me in trembling voice, "You are the second medical man who has ever seen this." Such was his modesty.

When he had completed his work at Zurich, he longed to go on a world cruise while the faculty members pleaded with him to stay and join the faculty.

He was married twice. His first marriage was to Johanna Henggeler in 1899. She died in 1905. His second marriage was to Marguerite Mueller in 1906, who bore him three children, all physicians: Dr. Marguerite, graduate of Yale Medical School; Dr. Arnold, graduate of Johns Hopkins Medical School; and Dr. Hanns, graduate of the University of Minnesota Medical School, Captain in the U. S. Army Medical Corps at Camp Leonard Wood. Mrs. Schwyzer and the three children survive him. He was a devoted father and husband and by his passing leaves a great void in his home. His children speak of the wholesome philosophy he inculcated in them.

He was exceedingly conversant in European medical lore and readily frowned upon any undeserved claims to priority in medical or surgical discoveries. He knew many of the exponents of medicine in Europe. He began his practice in 1894 in Saint Paul, Minnesota. His span of life covers the golden era of medical art and science from the unknown of human ills through a period of development up to serene heights of medical science and precision.

He was a linguist. In the Romance languages he had conversational ability in Italian and Spanish and was very fluent in French. In his home the Swiss language was used to a great extent. He was a perfect student of the German language. He became very accomplished in the American language. The background of all his linguistic culture of the modern languages was due to his knowledge of the classics, Latin and Greek. Many of his old case histories are written in Latin or Greek.

He made it a custom throughout his career here in America to go to Europe every third year. Nine months of heavy work and three months of relaxation formed his schedule throughout. While in Europe he would browse around the clinics and would invariably bring back a rich fund of new ideas and instruments. In 1903 he returned with a bronchoscopic and esophagoscopic set, the first set in Minnesota. Within a month he had an occasion to remove a foreign body from the right lung. The other two years he would live

during the summer months among the pines on the farm he loved, situated on Grindstone Lake, in Pine County. This was not a summer of loafing, but during the summer one or more books would be digested concerning which he had been planning the preceding winter. Here he entertained his many friends.

A lover of horses! He always had a proud span of sorrels for coach driving in the early years and other horses for riding, of which he was very fond. His riding companion was usually Dr. Alexander Colvin. He continued riding until five months before his passing. In fact he had his daily ride during the whole summer of 1943, and would swing himself up onto the saddle without a step or support.

He was a charter member of the American College of Surgeons and the Saint Paul Surgical Society; a member of the Minnesota Academy of Medicine, Minnesota Pathological Society, Western Surgical Association, Minnesota State Medical Association, American Medical Association, American Surgical Association, Swiss Surgical Society and International College of Surgeons.

From 1900 to 1902 he was Clinical Professor of Pathology at Hamline University and during this time Pathologist to the City and County Hospital of Ramsey County. From 1904 to 1908 he was Professor of Clinical Surgery, Hamline University, surgeon to the St. Joseph's Hospital, and since 1927 Professorial Lecturer at the University of Minnesota, in 1932, Professorial Lecturer Emeritus at the University of Minnesota.

For many years he was chief of staff of St. Joseph's Hospital. His mature advice was sought and followed by the hospital authorities. He was past president of the Ramsey County Medical Society, and the Saint Paul Surgical Society.

In 1914 the Schwyzer family again went to Europe. At the end of July the doctor attended a meeting of the Royal College of Surgeons in London. After the meeting on his way back to Switzerland, he strolled leisurely on the depot platform waiting for the train to take him to port for his boat across the channel. This was about August 3, 1914, a very critical period, politically. Some detectives promptly arrested him at midnight on the charge of espionage. He was taken to police court where he faced a long and trying period of questioning. He tried to convince the judges that he was an American citizen, that he was a surgeon, and had attended the meeting of surgeons in London. The answer of the judges was, "We still think you are a German spy, unless you can produce substantial evidence to the contrary." At this moment he was reminded that in his inside coat pocket he had a personal letter from his associate in Saint Paul, who in this letter recited the progress of a long list of surgical cases—recent operations. One of the judges, a police surgeon, read this letter and that promptly released him.

The decorum in his operating room was rigid. He exercised complete control of the asepsis down to every move a nurse would make. As he approached the operating room, there lay ready for him the history of the patient which was carefully scanned to review his memory of findings pertinent to the operation to be performed. A kindly greeting to his patient, then the preparation of the patient was done. Only one deep-throated, audible voice could be heard during the operation, and that was the voice of the operator. A riveted attention from the operator through assistants to nurses, a tense period.

His sense of asepsis was an art with him. The carelessness of a visiting physician or friend of the patient barging into the operating room with street clothes and an unprotected mouth was quickly but tactfully corrected. The attention to the operation was not diminished though visitors were present, but he would freely present the diagnosis and surgical technique in such a way that they did not soon forget.

He was a deliberate operator and keenly sensed the delicacy of the tissue to be operated on. The least possible trauma to the tissue and a minimum of evisceration were mottoes he followed and taught.

His labors were not finished. He had a patient with carcinoma of the stomach, scheduled for operation on the morning when the exploratory laparotomy was done on him. He had done a cholecystectomy the day before and some patients were convalescing from major operations.

The great master has gone to his rest. A well earned rest after fifty years of arduous labors in serving the human race in their afflictions. He died February 19, 1944. No more will we see the "Chief" walk the halls of his most beloved hospital, St. Joseph's, the oldest hospital in Minnesota. No more will a dainty lunch be served him after his morning labors in his private room. On a table in this room was a record book in which accurate reports were kept of his operations and recorded the same hour.

His far-reaching memory made him vibrant in discussions of vital medical and surgical problems. He was a man of powerful physique, handsome in appearance and possessing a commanding manner. He was also very correct in his social contacts, was pleasingly tactful and carried himself with an air of considerable dignity. His patients were overly glad to see him and were awed by his presence. As an eminent surgeon and a cultured gentleman, he commanded the esteem and self-respect of every one of his contemporaries far and wide. His many devoted patients spoke of him in emotionally disturbed voice. Many wept upon the news of his passing. The community of Saint Paul in one accord speak in highest praises of this eminent surgeon. All through his career he upheld surgical standards to an unwaveringly high degree. He fashioned the work day by urging an early hour for operating and promptness of his assistants and associates. Routinely, throughout his career, he advised his patients to get out of bed early. Following herniotomy and simple appendectomy he would get his patients up the second day. After more major operations they were allowed a proportionately longer period in bed. His principle was that the suture is the strongest the day of the operation, and activity prevents thrombus formation. Economically this procedure shortens the hospital stay and lessens morbidity.

(Continued on Page 324)



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ANOTHER WAY TO SAVE LIVES . . . BUY WAR BONDS FOR VICTORY

(Continued from Page 322)

Due to his skillful diagnosis and surgical technique, together with his ethical standards, he wielded a profound influence over medical practice in this community.

Early in his career, besides general surgery, he practiced obstetrics, eye surgery and ear surgery. In later years he also did brain surgery.

His ready knowledge of bone development aided him in recognition of the age of the patient when viewing an x-ray film. It was thrilling to see x-ray interpretations made back in 1911. We had no radiologists then.

His knowledge of cell structure, normal or abnormal, was extraordinary. Besides being his surgical assistant for eleven and one-half years and x-ray technician, the author also functioned as pathological technician, doing all the tissue preparation, working up through celloidin, and when the sections were all stained and mounted, we would have an early Sunday morning pathological conference, just we two. This was thirty-five years ago. Down the line, the master pathologist would not only diagnose the section under the microscope, but would in most instances pronounce the name of the patient from whom the specimen had been taken. This was usually from ten to fourteen days after surgery. Probably the keenest diagnosis and recognition of tissue under the microscope was when a slide was placed under the microscope consisting of a section of the wall of an echinococcus cyst. He did not know that a section was being made, as the surgical diagnosis was obvious. The echinococcus cyst wall is nothing but homogeneous material with laminated layers. He immediately recognized this section and associated it with the patient.

He kept up to date on the fundamental science of embryology, because time and again during surgery he would point out the embryological origin of the tissue before us.

His groundwork of Physics, Metaphysics, Organic and Physical Chemistry stood him in good stead in the preparation of an article on "Origin and Evolution of Life," which possessed a richness of thinking in the association of the unknown.

In 1903, a patient with a huge aneurysm of the innominate artery came for relief. Our American literature had not much to offer forty years ago on the technique of procedure. But the mastery of language was at his command when in the *Revue de Chirurgie* he found a report of a similar case. He followed the technique and ligated distally the common carotid artery and the subclavian artery. There was a risk to brain circulation and a very decided risk to the collateral circulation of the arm. For some days the right arm was pulseless, but the pulse, though faint, returned. The patient recovered. A few years ago he reported the operation and demonstrated the perfect result on the then living patient to the American Surgical Association at Yale University.

He devised a surgical technique for the correction of kinking of the ureter at the renal pelvis junction and an improved fascia suture whereby both ends of the silk-worm gut were on the same side of the incision, thereby retaining a constant suture tension on the fascia.

He performed the first cystoscopic examination in the state of Minnesota in 1894. This was not published at that time, but the prepared paper is at hand written in 1942, not published, and we are uncertain whether it has been presented to any group. He also performed the first removal of a foreign body in the lung in Minnesota in 1903.

On February 12, 1934, St. Joseph's Hospital tendered a banquet to commemorate his seventieth birthday as a gesture of honor to this famous surgeon. At this festival were assembled a representative group of the profession. Dr. John Lepak was chairman of the festivities and the speakers were: Dr. C. C. Chatterton, orthopedic surgeon and chief of staff of St. Joseph's Hospital; Dr. Gustav Schwyzer, eminent surgeon and brother of the honored guest; Dr. John L. Rothrock, teacher, obstetrician and gynecological surgeon; Dr. Justus Ohage, eminent surgeon, the first to perform cholecystectomy in the United States; Dr. George Geist, surgeon, composer and former associate of the guest of honor; Dr. William C. Carroll, surgeon; Dr. William J. Mayo, chief of the Mayo Clinic; Dr. F. C. Schuldt, surgeon and former associate of the guest of honor.

The ovations expressed were the highest tribute that could be spoken of a master surgeon. The sentiment of those gathered may be expressed in these lines:*

"'Tis given to few to know
what he has known,
'Tis given to few to see
what he has seen."

His has been a long and full professional life. He had a full measure of surgery, wide in its scope, to which he gave all he had.

His greatest compensation lay in the kindly utterances of his many grateful patients, giving wholesome expression to his marvelous power of healing.

I consider it a privilege and an opportunity to have been an associate of the great master. Although they were strenuous and time-absorbing years yet they represented a postgraduate course under his influence and teaching which covered the whole field of medicine and allied fields, surgical judgment, diagnosis, surgical technique. His teaching was in a faultless German language.

Medical literature has been enriched by his prolific writings. Approximately 83 publications are credited to his masterful pen. Due to his versatility in the various fields of medicine, his broad horizon and his linguistic ability he could cope with the whole range of medical science.

The following complete analysis of his writings has been compiled through the kindness of the librarian of our Ramsey County Medical Society.

Published articles	83
Manuscripts—presented not published	6
Manuscripts—unidentified not published	10
	99
Articles written, presented, not published, no manuscript	9
Total	108

*From the poem "The Old Master" by Dr. John Ryan.

(Continued on Page 326)





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(Continued from Page 324)

His surgical skill and the pages of medical lore he has written will immortalize his fame.

About three weeks before his end he was so optimistic about the progress of his disease that he discussed with his family the likelihood of spending the coming summer on the farm, and said, "I may be able to do some more writing." A week later he had in mind to write a farewell to the members of the staff of St. Joseph's Hospital. He wrote, harking back fifty years and recalled the available hospitals then, their relative efficiency, and admitted the asepsis was of a quality of the "Woolly West."

Then he recited how in the first year of his practice he met some of the representative men of Saint Paul. There he abruptly ended. It was evident that he had much more to say, that at the end he would close with a farewell in some formality. His strength had ebbed for that day and never returned. So this was his "Unfinished Farewell" and the end of his prolific career in the writing of medical lore.

F. C. Schuldt, M.D.

JAMES PHAON CALDWELL

Dr. James Phaon Caldwell of 1845 Buford Avenue, Saint Paul, Minnesota, died January 20, 1944, at the Midway Hospital following a brief illness.

He was the son of Dr. James P. Caldwell, a pioneer physician of Princeton and Lakeville, Minnesota, and was born September 6, 1883, at Princeton. When his parents moved to Saint Paul, James Phaon, known as Fay, entered Central High School, where he sang in operettas and started his athletic career on the football and track teams. Graduated in 1903, he enrolled at Hamline for two years, starred on the gridiron, and sang with the Hamline Glee Club and Church quartet.

In 1905 he entered Medical School at the University of Minnesota. Active in all campus affairs, he was captain of the varsity baseball team for two years, this placing him on the Athletic Board of Control. He was a member of Nu Sigma Nu, Alpha Tau Omega, and Grey Friars (honorary) fraternities. He sang in the glee club and was chosen for the leading baritone role in the junior and senior operettas.

He received his medical degree in the class of 1909, serving his internship in Northwestern Hospital, Minneapolis, and he later took postgraduate work at Johns Hopkins University, Baltimore.

He was employed as District Physician and Surgeon, comprising six towns, of the United States Steel Corporation at Coleraine, Minnesota, for nine years. He was married in 1913 to Nettie Jane Sylvester, and they had two sons: James, Jr., who is a lieutenant in the U. S. Army at New York Port of Embarkation, and Chester Byrl, who passed away at fifteen years of age in 1936.

In 1920 Dr. Caldwell assumed private practice in Saint Paul, with offices at 1013 West Seventh Street and 478 South Snelling Avenue for eighteen years, and later in the Lowry Medical Arts Building. He was active on the staffs of St. John's, Midway and St. Luke's Hospitals, and was also a member of the Ramsey County, State, and American Medical Associations.

In later years he enjoyed fishing, hunting, and golf and was a member of the M Club. Fay was an enthusiastic football fan for nineteen years. He practiced medicine to be of service to the common man, and thus in humble generosity found peace unto his soul.

He attended Fairmount Avenue Church, where services were held January 24, 1944, with burial in Roselawn Cemetery.

George Earl, M.D.

WILLIAM M. HALLER

Dr. William M. Haller, a captain and flight surgeon at Pueblo, Colorado, and a former Bemidji doctor, was fatally injured in an automobile accident at Everett, Pennsylvania, in March. His wife, the former Dorothy Lizer of Bemidji, was seriously injured in the accident.

Dr. Haller was born in Blair, Nebraska, August 5, 1910. He attended Blair High School and Dana College, located at Blair. He obtained his medical degree from the University of Nebraska in 1933. After interning at the Immanuel Lutheran Hospital at Omaha, he located in Bemidji, Minnesota, being affiliated with Dr. D. J. Jacobson of that city.

Dr. Haller was a member of the Upper Mississippi Valley Medical Society, the Minnesota State and American Medical Associations.

CAPTAIN WILLIAM W. HEYERDALE

The Adjutant General's Office has reported that Captain William W. Heyerdale, M.C., A.U.S., died March 11, 1944, following injuries sustained in an automobile accident on the island of New Caledonia.

Dr. Heyerdale was born at Rochester, Minnesota, April 12, 1907. He received the degree of B.S. in 1932 from the University of Iowa and of M.D. in 1935 from Louisiana State University. He was an intern at the Charity Hospital, New Orleans, from July, 1934, to July, 1935, and was physician on the *SS Delvalle* from July to October, 1935. He entered the Mayo Foundation as a Fellow in Surgery, October 1, 1935, and became a consulting physician of the Mayo Clinic in January, 1939.

He was a member of the American Medical Association and of Phi Delta Theta.

CHESTER JAMES STURGES

Dr. C. J. Sturges, formerly of Buffalo, Minnesota, died February 23, 1944, at the Veterans' Hospital, Minneapolis, where he had been located since 1940.

Chester James Sturges was born in Buffalo, Minnesota, December 29, 1896. He graduated from Buffalo High School in 1915, and received his M.D. degree from the University of Iowa Medical School in 1922.

On June 2, 1923, Dr. Sturges married Lillyan Thompson, and three children, Robert Leon, Richard Eugene, and Jeanne Ann, were born to the couple.

Dr. Sturges practiced in Buffalo from 1924 to 1927,

in association with Dr. J. J. Catlin. He then entered the Government Service in the Panama Public Health Department in 1928. He was transferred to the Medical Staff of the Veterans' Hospital at Bath, New York, in 1930, where he remained until 1940. He was then transferred to the Veterans' Hospital in Minneapolis, where he remained until his death.

FREDERICK W. SCHLUTZ

Dr. Frederick W. Schlutz, chairman of the Pediatric Department of the University of Chicago, died March 8, 1944, following a heart attack just before he was to leave on an extended goodwill mission to Latin America for the State Department.

Dr. Schlutz was well known in Minnesota, having been a resident of Minneapolis from 1910 until 1930 and Professor of Pediatrics at the University of Minnesota Medical School.

Dr. Schlutz is survived by his widow and a daughter, Mrs. Mary Tinker of Minneapolis.

ALBERT THOMPSON

Dr. Albert Thompson, who had practiced medicine in Saint James, Minnesota, for more than thirty-five years, died in his office, March 10, 1944, of a heart attack.

Dr. Thompson was born at Sacret Heart, Minnesota, April 22, 1872. He graduated with the degree of B.A. from Gustavus Adolphus College in 1899, and obtained his M.D. from the University of Minnesota in 1905.

Dr. Thompson was a member of the Watonwan County Medical Society and the Minnesota State and American Medical Associations.

JONAS SAMUEL WHITE

Dr. J. S. White, a former specialist in ear, nose, and throat in Saint Paul, died in Salisbury, Maryland, on February 20, 1944, of a heart attack at the age of seventy-two.

Dr. White was born in Manheim, Pennsylvania, December 9, 1871, and attended the public schools there. He obtained his M.D. from Jefferson Medical School in Philadelphia in 1893, and interned at the Presbyterian Hospital of Philadelphia. He was employed by the Sigue Iron Mining Company in Santiago, Cuba, in 1893-94, and on the Red Star Line Steamers from 1894 until 1897. He was a Contract Surgeon in the U. S. Army from 1898 until 1908.

Dr. White served with the rank of Lieutenant Colonel as surgeon of the 92nd Division and returned to Saint Paul, where he practiced until 1932.

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✦ Of General Interest ✦

Dr. M. S. Nelson is the new chairman of the Board of Health at Granite Falls. He was appointed by the city council at a meeting held in February.

* * *

Dr. C. W. Jacobson, formerly with the Bratrud Clinic at Thief River Falls, has taken over the practice at Breckenridge of Dr. Leo McMahon, who is awaiting call to active duty in the Navy.

* * *

Dr. J. L. McLeod was chosen chief of staff of the Itasca Hospital, Grand Rapids, at the staff meeting held in March. Others serving with him are Dr. M. J. McKenna, vice president, and Dr. Janet Sutton, secretary.

* * *

Dr. W. C. Alvarez of Rochester gave the annual Alpha Omega Alpha lecture at a recent meeting of the Alpha Chapter of Michigan at Ann Arbor: His subject was "The Art of Medicine." Following the lecture he was made an honorary member of the society.

* * *

Dr. William A. O'Brien, director of postgraduate medical education at the University of Minnesota, was reëlected president of the Minnesota Society for the Control of Cancer at its annual meeting in March. Also reëlected was Dr. Max Alberts of Saint Paul, first vice president.

* * *

Professor C. E. A. Winslow, Lauder Professor of Public Health at Yale University, has been appointed Editor of the *American Journal of Public Health,* succeeding Harry Stoll Mustard. Professor Winslow assumes his duties as Editor with the publication of the April issue of the JOURNAL.

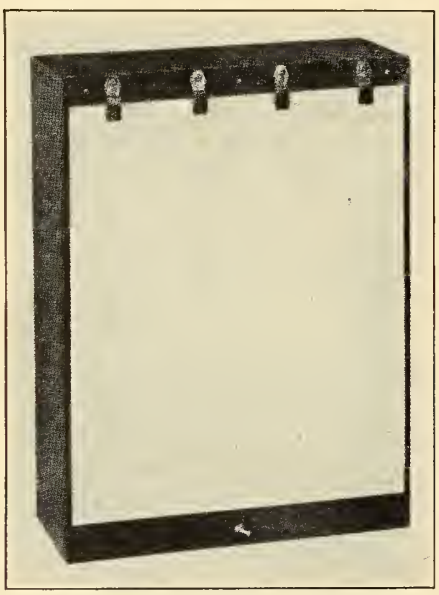
* * *

Word has been received that the exploit of Major Maurice N. Walsh, M.C., A.U.S., in which he cared for a wounded gunner in a bombing plane after he himself had been wounded has been acknowledged by the award of the Air Medal which was presented to Major Walsh by General Herbert Herman in recent ceremonies at a South Pacific base.

* * *

Dr. Ludwig Wolmer Anderson, physician at Atwater for the past thirty-six years, was honored Sunday, March 5, at a dinner given by members of the community in recognition of his years of service. Dr. Anderson will continue to take care of patients at his home but is retiring from active practice owing to failing health.

(Continued on Page 330)



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(Continued from Page 328)

Dr. Frank E. Mork of Anoka, who enlisted in the Navy Medical Corps, began his service as a surgeon with the commission of Lieutenant-Commander, March 27, at the Great Lakes Training Center. Dr. Harold Mork, nephew of Dr. Frank Mork, who has been associated with his uncle since 1941, will continue the practice in Anoka.

* * *

Dr. Howard Vogel of New Ulm, who has received a commission of Lieutenant (sg) in the Navy, reported March 16 to the Naval Base Hospital at Corona, California, for duty. Dr. Hjalmar Mortensbak, physician at Hanska for six years, will take over the practice of Dr. Vogel for the duration of the war. Dr. Mortensbak recently completed three years of surgical fellowship at the University of Minnesota. He has assisted in the Nicollet Clinic, Minneapolis, for the past nine months.

* * *

A recent release from the Navy Department stated that Rear Admiral Charles E. Rosendahl, former commander of the USS *Minneapolis,* commended Lt. Harry R. Walker and his assistants for their work in treating the injured on board the *Minneapolis* during the battle which took place off Guadalcanal on November 30, 1942. The thirty-five men most seriously injured were transferred to a hospital ashore at Tulagi, and not one patient transferred required further operative treatment. Every injured casualty aboard the *Minneapolis* recovered.

* * *

Lt. James F. Regan, commanding officer of a navy medical detachment serving with a marine raider battalion, was recently presented with the Army Silver Star for gallantry in action on New Georgia, Solomon Islands, during the operations against the enemy there last July. The citation accompanying the award read in part as follows: "Dr. Regan directed the activities in the care of and aided the evacuation of over 200 casualties, including seventy-two litter (stretcher) cases, in areas covered by enemy small arms, machine gun and mortar fire during the period from July 8 to July 12."

* * *

Dr. George M. Piersol, professor of medicine in the Graduate School of Medicine, University of Pennsylvania, and a member of the Council on Physical Therapy of the American Medical Association, has been named director of the new Center for Research and Instruction in Physical Medicine in the Graduate School of Medicine at the University. The Center was established by a grant of $150,000 from the National Foundation for Infantile Paralysis. Dr. Piersol will relinquish his private practice to direct the Center, one of whose objectives is to explore thoroughly the possibilities of physical means of treatment, not only of infantile paralysis but of other diseases as well.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

GALLBLADDER AND BILE DUCTS. Samuel Weiss, M.D., F.A.C.P. Clinical Professor of Gastroenterology, New York Polyclinic Medical School and Hospital; Gastroenterologist Jewish Memorial Hospital, New York; Consulting Gastroenterologist, Beth David Hospital, New York, etc. 504 pages. Illus. Price, $5.50, cloth. Chicago: Year Book Publishers, 1944.

A SYNOPSIS OF CLINICAL SYPHILIS. James Kirby Howles, B.S., M.D., M.M.S. Professor of Dermatology and Syphilology and Director of the Department, Louisiana State University School of Medicine, Senior Visiting Physician, Charity Hospital of Louisiana at New Orleans, Visiting Physician, French Hospital, Mercy Hospital, Hotel Dieu, Southern Baptist Hospital and Touro Infirmary. 671 pages. Illus. Price, $6.00, flexible binding. St. Louis: C. V. Mosby Co., 1943.

Though intended only to be a compendium, this relatively small book contains a great amount of good information dealing with the general considerations, as well as the familial and public health aspects, of syphilis. The text is divided into twenty-five chapters and there is an appendix entitled "Historical Note," also a large list of references.

The author reiterates in his Preface the important statement to the effect that treatment of syphilis requires a knowledge of the whole field of medicine. It is impressive that a review of this subject must touch upon so many and varied considerations in the field of medicine. The subjects having to do with prognosis, therapy and hereditary syphilis ever embrace categories concerning which there are differences of opinion. The favorable results even in the treatment of neurosyphilis detailed by this author find a hearty response from the reviewer, who has gained similar impressions throughout the last several decades. And the reader of this book cannot avoid being impressed by the many notable advances which have been made by our profession in the more successful all-around management of this human scourge.

J. C. MICHAEL, M.D.

ESSENTIALS OF DERMATOLOGY. Norman Tobias, M.D., 2nd ed. 497 pp. $4.75. Philadelphia: Lippincott, 1944.

This work of nearly 500 pages deserves special con-

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sideration for its conciseness, and it is practical to the extreme point. I do not remember a dermatology textbook which has so ably handled in such a short space the subject treated. In fact, it is a long story made short and, therefore, to be strongly recommended, most specially to the general practitioner who has no time to devote to extensive literature.

In my opinion, a book like this could be referred to by the average physician, and with a little practice, one could recognize with a good percentage of accuracy about 70 per cent of the cases that come into the office. The treatment is outlined simply and to the point, and for that reason, in my opinion, it is to be strongly commended.

The groupings, especially of the different dermatoses, are sensible and arranged in an orderly manner. Almost everything of any frequency is treated in this work.

It is the opinion of this reviewer that such a textbook would find a most useful place in the library of any general practitioner and would not at all be out of place in that of a specialist.

E. Z. Shapiro, M.D.

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 May, 1944 No. 5

SOCIAL AND ECONOMIC TRENDS IN RELATION TO MEDICAL PRACTICE

W. L. BURNAP, M.D.

Fergus Falls, Minnesota

A NUMBER of plans, designed to help in solving some of the pressing economic problems facing medicine today have been presented at this session of the National Conference on Medical Service. It is a healthful and encouraging sign that the profession in all parts of the United States is aroused, and that remedies are coming from the East, West, North, and South. One of the great services this Conference can render the profession is to so coördinate these plans that they may be presented to the House of Delegates of the American Medical Association in an orderly manner, and be molded into the policy of our national body. It is well to keep in mind that if certain attitudes of the American Medical Association do not meet with our approval, the blame can be placed squarely on our own shoulders; for we select the delegates, the House of Delegates determines the policy of the American Medical Association, and the officers must heed their mandates.

There is great danger to the people in the present challenge to medicine and public health, in the widespread demand for change in the economics of medical practice. The profession may feel pardonable pride that in the turmoil the dissatisfaction is not with the quality of medical services. The most vocal among the critics of the present order do not question the great scientific progress made by the profession of the United States. They recognize that, as free men, through our own organizations, we have set standards of education and practice which are the highest in the world, and have not failed in the first duty of the profession, which is to be prepared to supply, when requested, the highest type of medical service.

The criticism is in the distribution of medical service; that is, in its costs and availability. Most plans proposed by politicians for improving this distribution, lose sight of the fact that freedom of the doctor to practice and the patient to choose his physician, is as essential to excellence as the roots are to the tree and the fruit it bears. If the roots are cut, the fruit is injured; and if the process is carried far enough, there will be no fruit. Just so, if freedom is destroyed, there will be no excellence in medical service.

Though we cannot agree with the solutions to the social and economic problems of medicine which have been offered in the Wagner Bill and similar plans, we must not let that blind us to the fact that the social and economic phases of medical practice have lagged behind the scientific and humanitarian aspects and that we should give careful and serious consideration to medical costs and distribution. We have a great tradition to protect and a great responsibility to make sure that we do not open the door for state or political medicine through blindness or indifference.

The family doctor was the pioneer and nucleus of our system, and his whole-hearted service continues to be the grassroots of practice; for he

Presidential Address presented before the National Conference on Medical Service, Palmer House, Chicago, February 12, 1944.

continues to go when and where he is called, night and day, in fair weather and foul, just as he did when his tools could be carried in his little black bag. His motto still is the motto of the great Hippocrates, "The regime I adopt shall be for the benefit of my patient according to my ability and judgment." It is our prayer that the time will never come when the ideals he exemplifies of service and Christian living, will be replaced by political medicine.

The responsibilities of the family doctor have been extended, due to the great and rapid expansion of medicinal science and to the increase in the indigent problem. A few years ago, one man could attain proficiency in the entire medical field; now he can only become reasonably proficient in one branch. On this account the family doctor has become also the advisor as to where the best special services may be attained. Here again, he has adhered to the principle, "The regime I adopt shall be for the benefit of my patient according to my ability and judgment," referring his patients where, in his judgment, without thought of personal gain, they will receive the best service. With regard to the indigent, the family doctor in the early days was usually able to care for his patients without aid from tax funds, varying his charges according to the ability to pay; so that the patients with ample resources could and did pay a fee which would permit the doctor to care for the poor without remuneration. But the number of indigent has outstripped the capacity of the doctor and private charities to furnish care, so that the State has been forced to assume its proper responsibility in furnishing medical and hospital services to the indigent. After many trials and errors, care of the indigent is now furnished, in most localities, on the basis of a free choice of physician, with the fees to the physician determined in joint conferences between the agencies and the medical societies. The result is that indigent in America undoubtedly receive the best medical services in the world, and there is no such thing among us as the political doctor of the poor.

In spite of the fact that patients of all classes receive a high type of medical service, there still remains the problem of high costs and distribution. This problem is acute with the group designated as "low income," constituting 15 to 20 per cent of the population. Though the total bill for medical services is less than the total bill for tobacco, movies, or automobiles, that fact does not constitute an answer to critics of our costs. If our overhead is too high, we cannot take refuge in the fact that the total bill is less than that for cigarettes, even though our services be worth vastly more. When we give thought to the matter, it is evident to most that there is often duplication, overlapping, and waste in our administration; in short, our business methods have not kept pace with our research and scientific progress.

Perhaps some of you will recall what Mr. Paul G. Hoffman, President of the Studebaker Corporation, and now Chairman of the Committee on Economic Planning, suggested to this conference two years ago.

"Judging solely from what I have read,—there is a problem (of high costs) which has not been fully met . . . With reduction of national income and reduced individual income, in order to maintain automobile volume, we had to bring down both the original cost and the upkeep of our cars. Many millions of dollars were spent in market research on this problem . . . I raise the question as to whether the medical profession has made a similar survey to find out what type of service the average person requires and what he can afford to pay for it. I raise the question whether you have applied your fine professional brains to the challenge of every item of the cost of medication, including hospitalization, to make certain that you are giving the customer the best break you can for his dollar. These questions come to my mind because of my confidence that better answers can be found for them by private than by socialized medicine. If there is anything at all to the questions, I urge quick action because, if the battle for freedom is lost on the medical front, our fight to preserve free enterprise in business will be that much harder . . ."

So far as I know, no one, except an occasional clinic or group manager, has done anything that might look to a modern industrialist like a "Market Research" into this problem.

Now, another industrialist, Henry Kaiser, the shipbuilder, has provided the backing for a challenging experiment in providing good medical service, for less. Mr. Kaiser, on the basis of his experience in his shipbuilding plants, says he can deliver complete service of a high quality to his employes on a pre-payment plan at a cost of a few cents a day. He says he is paying good salaries to his professional staff, meeting all over-

head costs, and making a return on his investment, as a result of applying good business methods in the administration of the service.

It is quite possible, of course, that the Kaiser experiment will not appear so rosy either from the point of view of quality of services or business management when it is more closely scrutinized.

But the whole undertaking has been dramatically exploited in popular periodicals and in Congressional hearings. It warrants the closest study by medical organizations because it is bound to have a profound influence on the attitudes of many observers. Certainly, it must not be dismissed with scant consideration. Above all, we must not take it for granted that deficits must of necessity go hand in hand with good service, just because they often have.

There is every reason to believe that enlightened industrialists, hard-pressed themselves, leaving no stone unturned to protect the future of free enterprise in America, are taking account of the Kaiser experiment and the possibilities of supplying either medical service or insurance against costs to their own employes. In this connection, an open letter published in the February issue of the *Reader's Digest* is enlightening. This is a letter by Austin M. Fisher, a labor-relations consultant serving many American companies, and addressed to big employers of labor.

"Everyone who works for a living worries about the threat of sickness unless he is employed by a firm where protection is part of the scenery. Unless you do something about it first, the political representatives of your workers are going to do it for you with your money . . . Furthermore, to put it across there will be plenty of drumbeating about the selfish 'vested interests' which will drive another wedge between you and the employe who ought to like and respect you for being a right guy . . . The results will be something like this:

"The country will get some sort of health insurance program but business will pay for it through the nose.

"It will yield less to the industrial worker than if each business firm were to institute a sensible plan of its own.

"The politicians will be the heroes and will acquire an impressive following of new federal office holders with their teeth in life-long jobs.

"And, once again, Industry will look and feel like a tired old heel."

There is a warning for medicine in Mr. Fisher's letter to industrialists. Are we ready to work with these men in defending our entire system of medicine, as well as business, from the political heroes? Or will medicine, like industry, do too little, too late, and be made to look and feel "like a tired old heel"?

Personally, I am certain that it will be possible for organized medicine, without sacrificing any essential standards or traditions, to work closely with industry in establishing many industrial plans for prepaid medical service or for indemnity against medical costs, all on a sound ethical and scientific basis. I feel sure it will be possible for organized medicine to coöperate with public and private agencies to establish plans for voluntary prepaid medical service to other sections of the population. I believe it will be possible to coöperate also with the state and federal governments on a sound basis to create new patterns for providing medical care in sparsely settled rural areas and in impoverished districts where returns are not sufficient to support an adequate number of doctors and hospitals on a traditional basis. I believe it will be possible to coöperate with the Veterans' Administration in a plan for care of many of the sick veterans, who will flood the government facilities after this war, in their home communities by private doctors and in civilian hospitals, instead of investing vast sums in new government facilities. We must deal wisely and realistically in our postwar planning, because the public welfare demands it; and because if we do not, the political heroes will do it for us. These are large problems, some of them very long range; but they will not be solved unless we will diligently appraise our own costs and prepare ourselves to provide a high standard of medical service, for less.

That there is much wasteful duplication of equipment is natural, as medicine in America has been practiced in independent units, each practitioner holding ownership and control of all his tools and equipment. During recent years there has been a very rapid expansion in the expense and amount of equipment required, and in the need of specialization for its proper use. This can be well illustrated in the development of the x-ray. The tremendous value of x-ray in diagnosis and treatment was demonstrated but a few years ago. Doctors who could afford it, and many who could not, purchased these expensive machines; but as the science of roentgenology developed, it became evident that this

is an extensive specialty—one in which a busy practitioner cannot perfect himself. Today we find doctors within two or three doors of each other, individually bearing the costs and upkeep of expensive machines which are used only a fraction of the time, and inefficiently. If time permitted, this illustration could be extended to many branches of medicine, all of them involving a large unnecessary overhead.

The answer is probably a closer association in groups, each member of which has some special efficiency, and all of them having access to the same facilities. Group practice is probably simplest and most efficient in a clinic, but can very well be extended to independent physicians practicing in the same building or community. Whether we are practicing in a clinic, or group, or singly, the greatest challenge to medicine today is to furnish the highest type of medical service at the least possible cost consistent with good service.

Last year the National Conference played an important part in the effort which led to the creation of the Council on Medical Service and Public Relations. This year we take great encouragement from the fact that the Council is diligently and intelligently at work. We appreciate the difficulties it has encountered in its organization, and wish to compliment the members on what they have thus far accomplished. But, in spite of what has been done, there is great disappointment that a Washington office has not been opened. The impression was that this would be one of the first and most important functions of the Council.

One reason why the profession at large is so strongly in favor of a Washington office is the fact that the profession is almost invariably held in greater respect at home after close coöperation with state legislative bodies is established than it was before. On the other hand, our parent body is trying to handle our relations with Congress and the federal government at long range, and according to reports that have reached all of us from members of Congress, themselves, when information and assistance is wanted quickly, there is no one in authority to give it to them. The results have been disastrous at times and the respect in which the profession is held in Washington has suffered. No time should be lost, I believe, in opening an office in Washington. We are entitled to a headquarters in the center of action, it is badly needed and there is no other way to win our battle. No group in the world has more to offer for the welfare of the people; but we must have bold leadership now if we are to make our contribution effective. If we do not have such leadership both the public and the profession will suffer.

Certainly, we shall never regain the respect we have lost by wrapping ourselves in offended dignity while vital information is gathered and peddled to doctors and Congressmen alike by the grapevine route. What we need first is a sound public policy which is specific in application to matters involving the public health which must be dealt with by Congress or the government. It must be a positive policy which offers a sane and workable alternative to the proposals with which legislators will be increasingly bombarded. Second, we need an office headed by able, wise, representative leaders of the profession who will announce openly to Congress, "Here we are, ready to advise you on health legislation; ready to help you to take the fundamental steps toward a better health program for America; to create a Secretary of Health in the Cabinet, Public Health Committees in the House and the Senate which can deal in an intelligent and coordinated fashion with all the problems involving better public health and distribution of medical facilities in the country." What a sad situation exists today, when all matters involving better public health, which Disraeli termed, "the first duty of the state," go through the Department of Agriculture, or of the Interior, or Labor, or the Post Office, or the Treasury, and in the Congress become the business of a hodgepodge of indifferent committees from Interstate Commerce to Finance. Little wonder that there are gaps in the public health protection of our people.

To follow any measure with all of its possible amendments and changes through a succession of unrelated committees requires superhuman watchfulness, and has already been shown to be beyond the powers of the mysterious individual who is said to come out of hiding, now and then, to phone Chicago in case of need. The medical profession is a powerful group. If we assert ourselves openly and intelligently in the interests of the people, we will not be defeated. But

we must have leadership; fearless, wise, and patriotic, both in Washington and out. Platitudes and propaganda will not suffice. Neither will mere obstruction in the face of the obvious trends of the times. Let us put our house in order and step forth proudly for principle rather than expediency, because, as it has been said, "It might turn out as it has persistently in history, that what is right will prove in the long run to have also been expedient." Having done so, we may well adopt Admiral Farragut's battle cry, "Damn the torpedoes! Full speed ahead!"

POSTWAR PLANNING FOR MEDICINE

EBEN J. CAREY, M.D.
Dean of Marquette University School of Medicine
Milwaukee, Wisconsin

POSTWAR planning for medicine is inevitably bound up with the plans of labor, industry, agriculture, civic leaders, and the government. Medical practice and education, along with every other phase of American life and education, has been adjusted to the all-out war effort. Our endeavors to produce and distribute more well-trained physicians for the military and civilian needs of the country are meeting with some measure of success to date. As we move toward even further coördination with the national programs as the war progresses, it is inevitable that we keep in mind not only the immediate objectives but that we also retain as fully as possible the sound foundations of medical practice and education built during the past upon which the postwar adjustments will be based.

Labor, industry, agriculture, and civic leaders declared Saturday, February 19, 1944, in Atlantic City, that there must be united, coöperative action and understanding among them for the postwar prosperity of America or the task will fall upon the government.

Representatives of sixteen major organizations concluded a postwar planning conference in Atlantic City by naming the following threefold program as their aim for postwar America:

1. Economy of plenty instead of scarcity.
2. An opportunity for people to have jobs, increasingly better living standards and educational advantages, and,
3. An opportunity for people to save and invest.

Presented at the annual meeting of County Officers of the Minnesota State Medical Association, St. Paul, Minnesota, February 26, 1944.

Co-operative Action

The delegates, through their publicity staff, headed by Robert Watt, American Federation of Labor representative, said that "The desired objectives can be brought about by united co-operative action and understanding among all of the country's major economic groups as producers and consumers."

Watt said the consensus of the delegates was "that if we fail to do these things together then the task will fall upon the government."

In a statement drafted by a committee headed by Albert Goss, master of the National Grange, the delegates said, . . . "It is the unanimous conclusion of the conference that the highest degree of prosperity and employment is assured when the widespread buying power of the public, based on the production of goods and services, is maintained. It is further agreed that over any long period of time no one group can be prosperous unless the other groups are also prosperous."

Over-All Policy

Some delegates expressed themselves as in favor of Congress setting up a reconstruction committee to determine the over-all policy which would be followed by all agencies, and that the groups most concerned be sought as advisers.

Plans were drafted by the delegates to reconvene in about two months. At that time they hope to take under discussion: Agricultural problems, capital and credit, currency stabilization, distribution of products, financing social security, foreign trade, taxation, and reconversion—including contract termination, renegotiation, disposition of government-owned plants,

equipment and supplies and surplus agricultural products.

The following groups were represented: National Association of Manufacturers, American Federation of Labor, Congress of Industrial Organizations, National Grange, American Bankers' Association, Association of American Railroads, Aeronautical Chamber of Commerce of America, American Farm Bureau Federation, American Legion, Chamber of Commerce of the United States of America, Committee for Economic Development, Investment Bankers' Association of America, Kiwanis International, National Council of Farmer Coöperatives, National Foreign Trade Council and Rotary International.

The Baruch report on postwar adjustments apparently goes far toward meeting the prime desire of both industry and labor, namely, the least possible unemployment between war and peace production, and avoidance of inflation. In switching from war to peace, speed is emphasized in settling war contracts and in moving government-owned machinery from factory floors. The Baruch report contains the provision for the coöperation of various groups, the maintenance of private enterprise and the avoidance of governmental restraints. The following conclusions were made:

1. War contracts would be terminated by "teams" of five men, sitting with representatives of industry, with the power to make final settlements. The Comptroller General would sit in only when there is suspicion of fraud.

2. If the negotiators fail to agree swiftly on a settlement the contractor would receive 90 per cent of what the government is willing to pay, while the arguments progress. This also gives the contractor a free hand to negotiate private loans.

3. The provision for moving government-owned wartime machinery from factory floors is an ingenious hedge against delay in government bureaus. The Baruch report suggests that the government be compelled to move its machinery sixty days after the factory has presented an inventory. If not, the factory can store the machinery and the government will have to pay storage charges.

4. Getting peacetime goods out in a hurry is a hedge against inflation. The sooner the store shelves are filled the less chance for price rises.

5. Baruch says few new enterprises could stand now with any hope of repaying borrowings out of earnings. He suggests a reduced postwar tax program be written now, thereby permitting employers to plan postwar expansion.

6. Particularly lenient provisions for small business include priority in the shift, easy loan provisions, and a blanket payment of small business claims against the government.

The American Medical Association took a forward step when it organized the Council on Medical Service and Public Relations. It is expected that this Council will be aided by local committees on both a county and state level. It is, likewise, expected that these local committees will be informed of the activities of the Council and in turn that the Council will be informed of the activities of the local committees.

The Council on Medical Service and Public Relations has an immediate and important work to do. This does not relieve, however, local county medical societies from the responsibility of doing their own public relation work. Just as we are making a plea before the nation for the conservation of the personal relationship between physician and patient, we must likewise see to it that the personal relationship between the local county medical society and the local community is likewise conserved. The responsibility of the local county medical society and the individual physician to do their own public relation work cannot be passed above to either a state or national level. There are problems in public relations, however, on a national level that medicine organized on a national basis is best able to do. It will be in this field that the newly created Council on Medical Service and Public Relations will function.

The New York Academy of Medicine recently created a "Committee to Study Medicine and the Changing Order." The Committee's objectives were defined as follows:

> "To be informed on the nature, quality and direction of the economic and social changes that are taking place now and that are clearly forecast for the immediate future; to define in particular how these changes are likely to affect medicine in its various aspects; to determine how the best elements in the science of medicine and its services to the public may be preserved and embodied in whatever changed social order may ultimately develop."

In carrying out these objectives, the Committee plans to survey changes that are currently taking place and to consider others likely to take place during the next decade. Information is to be solicited from a wide variety of groups, including sociologists, economists, representatives of organized labor, industrialists, bankers and politicians. In a release to the press, the Committee states: "Every shade of political and economic thought is to be represented."

Some months ago, the Medical Society of the District of Columbia created a Committee on Medical Service which in coöperation with its Committee on Medical Economics is engaged in a study and development of a comprehensive health program for the District. Conferences have been held by officers of the Medical Society with physicians, health officials, and laymen who are leaders in their respective fields for the purpose of obtaining their views on medical care. Data have already been obtained which will prove valuable when the Society considers a definite program.

The deeper the officers of the Society delve into the medical care problem, the more firmly they are convinced that it cannot be solved by the medical profession alone. It is one which must be shared by representatives of the Government, business, labor and other groups. Only by coöperative action and mutual understanding will the health needs of the people be fully met.

The health needs of the American people certainly will not be met by putting into effect the provisions of the Wagner-Murray-Dingell Bill now up for consideration. The reasons are the following:

1. Enactment of this legislation would be a further step toward a centralization of authority in the Federal Government and destruction of state sovereignty.

2. Paternalistic features would weaken the exercise of individual initiative, a fundamental characteristic under our system of government.

3. The origin and manner of presentation of the program afford a striking example of the tendency of bureaucracy to expand its power, the original sponsors being officials and employes of the government.

4. The cost of the program would be a serious drain on the budgets of Federal and State Governments, and its financing would add a further obstacle to its functioning.

Senator Wagner in the *New York Post* stated that his Bill was not un-American, because Congress in 1798 adopted a Marine Hospital Service for American seamen which was the first compulsory health insurance legislation in the world. This action was taken for a small isolated group of men who, during their normal pursuits, would never have the advantages of adequate medical service. It is a fallacy of thought, therefore, to make the claim that compulsory sickness insurance would be good for the American people who have the best private services available. No one claims that the distribution of medical care in the United States is perfect but perfection would never be reached by turning this medical care over to the government because it would degenerate into political medicine, just as our economics have degenerated in many places into a political economics for getting group votes. This is what has happened in Germany, Austria, France, and England. There is no reason to expect, based upon past experience, that our American politicians would do any better by their constituents. Promises of good medical care or improvement in medical care, like the political promises we have heard in the past, not only would undermine the health of the American people but would be used as a means of keeping the people sick and in slavery. This is the clear record of state-controlled medical care in Europe, and neither the American patient, when adequately informed, nor the American physician wants such a condition to come to pass. The responsibility of each American doctor to assume his ancient role as teacher is now necessary.

Political Dangers

No one can predict, at this time, what the form of medical care will be in the future. However, it is vitally important that medical students and physicians be prepared in the public interest to initiate and guide the responsibilities of the professions under the various changes in the political, social and economic conditions. The prime responsibility in maintaining the health and dispensing medical care in the future must rest upon the shoulders of the trained physician. The doctor, with truth as his shield, must be ready to fight for the right.

Unless a way is found to correct the lack of effort and facilities to promote an understanding by the public of the history of medicine, its progress and its unsolved problems, all too soon the "practical" politician, without ethical restriction, through political newspaper publicity will garner to himself from an ignorant public the glory due to the men of medicine who today represent a century of progress. The informed men of our free press differentiate between the true and the spurious.

Liberty means responsibility, not license. That is why many men dread it. The love of liberty and truth requires constant vigilance and ceaseless effort. The history of liberty is a history of the limitations of governmental power, not the increase of it. The greatest dangers to liberty lurk in the insidious encroachments by men of zeal, well-meaning and with noble aims but without understanding of ways and means and of basic human nature. The armor of truth of the free man must be vigilantly preserved during these days of war and false propaganda.

The medical profession must become militant. It has been too long on the defensive. By militant I do not mean headstrong and obstinate. Sympathetic leadership in medical education, public health, and sickness care must be supplied by the physician. Absolute willingness to confer, to be considerate of the opinions of others, and to coöperate, is needed. Mutual faith, honesty, and good will are needed by the state, the public, industry, labor, agriculture, and the health professions (medicine, dentistry, pharmacy, nursing, and social service) in order to make needed progress in health and sickness care. *The conference room, however, must not be stacked in the future as it has been in the past.* Prior propaganda which undermines the confidence of the people in the American medical profession must stop. I am sure the American doctor will cooperate to the limit with any honest agency which is not seeking to destroy him and his belief in the sacredness of the individual human life.

Future of Medical Science Bright

The shift in the age distribution will be reflected more and more in medical teaching, research, nursing and hospital care. The new science of geriatrics was practically unknown twenty years ago. The degenerative disorders of the heart, blood vessels, kidneys and joints, together with the various forms of malignancy account for 60 per cent of the deaths in individuals over forty years of age and for most of the disabilities in individuals fifty years of age and over. The spectacular results from the sulfa drugs and penicillin have added a whole new and gratifyingly successful field of treatment for many obstinate and frequently fatal infections. The newer developments in mental medicine, nutrition, shock, tropical medicine, radiation therapy, endocrinology, the virus diseases, immunology and industrial and war surgery and physical medicine have had a profound influence on medical instruction and research. These and many other contributions will play important roles in the medicine of tomorrow for which we must prepare today. The Committee on Psychological Medicine, Royal College of Physicians of London, Interim Report, 1943 (October) stated:

> "Medicine has never been considered wholly a matter of physical disease: much of the illness which doctors have to treat, and some which they might succeed in preventing, is due to psychological rather than physical causes; but in medical education little regard has been paid to this manifest truth. The medical student has commonly had, by the time he qualifies, a handful of demonstrations and lectures on psychoses, incidental teaching on the diagnosis and summary handling of psychoneuroses, and perhaps a cursory notion of psychological theories: anything further will depend on the individual student's enterprise or curiosity and on whether he has attended one of the very few medical schools where the systematic teaching of psychiatry is thorough. Such a state of affairs would not have continued unless there had been many who believed the present training to be adequate. They regarded psychiatry as a specialty—an abstruse and even incoördinate specialty—in which the practitioner should not meddle; imparted knowledge, which might turn out to be ephemeral theory, would not guide him, it would be more likely to lead him astray; let him put his trust in common sense and clinical experience, which would amply enable him to manage the problems that were manageable, and to recognize the unmanageable ones which must be referred to the specialist."

This point of view has been tellingly refuted during the present war; the shortcomings of the old training have been patent to those responsible for the health of men in the Services, and the deans of medical schools have been asked to ensure that the undergraduate course should be so amended that newly-qualified doctors would be better able to deal with common psychiatric

problems. But even before the war the weakness of the above contention had been evident; it ignored available facts and it rested on a false assumption. Psychiatry is not a specialty in the sense in which otology is a specialty; psychological causes and psychological effects may appear in any illness, no matter what its pathology or what part of the body it affects; and the more preventive the doctor's purpose, the more imperative it is that he should not ignore psychological factors nor trust to his intuition to tell him how to utilize and control them.

A Committee on Mental Medicine under the able leadership of Doctor Ebaugh, of the University of Colorado, has made excellent suggestions for improvements in medical education in this field.

Doctor Meleny, Chairman of the Committee for Creating More interest in teaching tropical medicine in medical schools, has exerted a tremendous influence and has laid the foundation for a broader development of this phase of instruction in a much more practical and vitalizing way. The John and Mary R. Markle Foundation has provided $75,000 during the current year for this purpose.

Col. Walter S. Jensen in *Military Medicine,* February, 1944, stated:

> "The average family doctor of the future will have to know about the diseases of every part of the world, for no spot on the earth's surface will be more than six days away."

The Committee on the teaching of preventive medicine and public health, organized in 1939 under the Chairmanship of Doctor Mustard, was established to coöperate in formulating a program for the education of undergraduate medical students in the preventive and public health aspects of medicine. There has been an unfortunate gap in many medical schools between the teaching of clinical and public health subjects. Through such a course the proper sphere of the state in providing a healthful environment may be emphasized. When the roles of the state and private physician are better understood unfortunate conflicts may be avoided.

A very important postwar problem of major significance will be the demand on return from military service for postgraduate instruction in medicine and its specialties as an orientation to civilian practice. When our doctors return home the demand for postgraduate or short refresher courses will be requested by scores of these physicians. Many of them will also seek relocation for practice. The reabsorption of these physicians will constitute a formidable postwar problem of readjustment in civilian practice. At the present time the Council on Medical Education and Hospitals of the American Medical Association, the American College of Surgeons, the American Hospital Association, and the Association of American Medical Colleges are studying seriously this problem. May I suggest that the county officers of the Minnesota State Medical Association consider seriously this problem. In coöperation with the Minnesota State Medical Association and the State Chairman of Procurement and Assignment, now is the time to consider the needs of our various communities and the professional rehabilitation of our colleagues who will return from the Armed Forces either as casuals at the present time or as victors at the termination of this conflict.

Each county medical society is in a position to devise the best method of interprofessional cooperation, lay coöperation, and public instruction. A good program of understanding developed by the physicians and the local county medical society will do more to create public good will than any national program promulgated from either Washington, D. C., or Chicago. Through your local press, radio, exhibits, and lectures before groups of men and women good work in education may be done. Yes, if each individual physician as a vital unit in the county medical societies did his own conscientious public relations work by abiding by a code of ethics and the golden rule, criticism of medicine from certain sources will cease. No public relations officer in either Chicago or Washington can act as a substitute for the work that must be done by each individual physician. Each state and each county medical society is in a position to work out the best methods, if needed, for the payment and distribution of medical care to certain groups of societies. If we do not want social and economic planners of the government to collect our fees for us, it will be our local job to evaluate the local distribution of medical care and the ability of the people to pay for this care. It is a certainty that when people have good jobs they want good private

doctors. It is our responsibility, therefore, to cooperate with local groups who are attempting to maintain our private economic system.

Summary

1. The postwar planning for medicine involves medical education of both the physician and the public. A re-evaluation of individual and public health is necessary with a clear understanding of the factors (environmental, physical, chemical, and mental) that maintain and undermine health. Education and not unwanted legislation is now needed.

2. Medical care must remain in the control of physicians. The old adage is still true that: "he who controls the purse controls the policy."

3. Medicine should coöperate with those who believe in private enterprise: labor, agriculture, management, civic leaders, interprofessional groups (law, dentistry, hospital, pharmacy, nursing, et cetera) and government who are attempting to maintain independence for the American people.

4. Help to establish an economy of plenty instead of scarcity, because when people have good jobs they want good doctors and not hirelings of the politicians.

5. Help to establish an opportunity for people to have jobs, increasingly better living standards, and educational advantages.

6. Help to establish an opportunity for people to save and invest.

7. Help to reëstablish in civil practice the 50,000 physicians who freely volunteered under Procurement and Assignment to render medical care to our Armed Forces in this global war.

8. The doctor must assume his ancient role as teacher in order that the public be informed adequately as to what medicine can and cannot do in order that through united action, coöperation, and understanding of postwar prosperity and good medical care will be a reality and not a delusion.

9. Education, mutual understanding, and sincere willingness to consider the opinions of others, to confer, and to coöperate and not hasty legislation are now needed if the light of medical science is to shine as brightly in the future as it has in the past. The light of science brightly shines only in an atmosphere of freedom. It flickers and dies in an atmosphere of tyranny and dictatorship.

TREATMENT OF WAR WOUNDS OF THE EXTREMITIES

MAJOR CARL A. CASPERS, U. S. ARMY

THE management of wounds, regardless of location, presents the same problem to the military surgeon in this war as it has in past wars, namely, treatment of shock, control of hemorrhage, prevention of infection and immobilization of fractured extremities. Wounds of the extremities routinely make up the largest percentage of battle casualties reaching a hospital for treatment and as such constitute our greatest problem.

The definitive treatment of the acute cases varied with the type and severity of injury. Traumatic shock, our primary consideration, was treated by the ordinary measures consisting of application of heat, just sufficient to keep the patient comfortable, elevation of the foot of the bed, and introduction of plasma, whole blood and intravenous fluids. Pain, a contributing factor in shock, was relieved with morphine.

In general the treatment of all wounds was carried out under aseptic conditions. Caps and masks were worn by the surgeon and operating room personnel. In preparing the wound, the soiled dressing was removed and a sterile one reapplied; a large area about the defect was then shaved and cleansed with white soap, care being taken not to contaminate the wound with the washings. The anesthesia of choice was pentothal sodium given intravenously.

In order to evaluate the extent of damage of a given wound and thereby direct intelligent treatment it might be of value to consider the main types of wounds inflicted by various shaped missiles. Through and through soft tissue wounds

Major Caspers, writing from the South Pacific Area, was formerly associated with Dr. M. O. Henry, Minneapolis, in the practice of Orthopedic Surgery.

produced by small caliber, high velocity, non-explosive bullets, present small wounds of entrance and exit. The intervening tract may be superficial and of short length, or it may be deep and of varying length. Similarly, the degree of damage differs, and is most difficult to evaluate from mere inspection of the wounds and limb. Treatment consists of excision of ragged skin edges and frayed fascia, and enlargement of the opening in the fascia to permit visual and instrumental exploration of as much of the tract as possible.

All foreign material, blood clots and devitalized muscle tissue are removed. The wounds are then frosted with sulfanilamide, and flat vaseline strips and sterile pressure dressing added. A rubber drain is not necessary and a tight vaseline gauze wick acting as a firm plug is definitely contra-indicated. Ordinarily, rapid healing may be expected in this type of injury if debridement has been complete.

This type of wound, however, is not without complications. In the neighborhood of large arteries it is the commonest cause of traumatic aneurysm. The initial hemorrhage, following trauma to the vascular wall, produces a swollen extremity. After rest and elevation the limb resumes its normal size. At this time a swollen, pulsating mass with a bruit over it is felt. We have operated successfully on three such aneurysms: one of the brachial artery in the lower third of the arm, and the other two, arteriovenous aneurysms of the popliteal and mid-femoral arteries. In the latter cases the vein and artery were both ligated close above and below the defect, preserving all collateral branches possible, and the damaged intervening portion excised. In another case of femoral arterial injury, an emergency operation followed a dramatic secondary hemorrhage on the ward in which the blood spurted upward from the wound for some distance.

This experience would seem to indicate that one should be conservative in amputations of a limb presenting edema and bluish discoloration as the direct result of severance or ligation of a major artery. Collateral circulation should be encouraged by intermittent elevation and lowering of the part, application of local heat *proximal* to the site of injury and sympathetic block. Results are often gratifying.

Wounds produced by ricocheted bullets, explosive shells and shrapnel from bombs and hand grenades are of a more serious and destructive nature; the extent of injury depending on the size, shape and speed of the missile. The wound of entrance and the wound of exit if present, are relatively large and connected by a ragged torn track of bruised, lacerated and devitalized tissue. Dirt, clothing and other debris are commonly carried into the depths of the wound. Bone may be shattered and driven into the tissues adding further destruction of the soft parts. These wounds are prone to become gangrenous. To save limb and life immediate and thorough treatment is necessary. Following the initial skin preparation and draping, a complete debridement is carried out. Ragged skin edges are removed by excising not more than ⅛-inch of skin from the margin of the wound. It is not necessary to sacrifice more normal skin tissue. Frayed fascia is excised and taut fascia such as facia lata of the thigh is split widely both across and in line with its fibers—to relieve tension and allow for further swelling of the soft parts. All devitalized muscle is completely removed; foreign bodies, loose bone fragments, dirt, and blood clots are evacuated; dirt-impregnated bone ends are rongeured off and hemostasis secured. Saline irrigations are a distinct aid in cleansing the depths of the wound of finely dispursed debris. This is no place to be conservative. Any remaining devitalized tissue, especially muscle, becomes an excellent culture media for bacteria. The dire result of such a wound is well known. If large joints are involved they should be debrided, cleaned of foreign matter and blood clots, using a moist sponge, and the synovia sutured. Severed tendons, in a potentially infected wound, should be left for secondary suturing. The wound is then frosted with sulfanilamide crystals, vaseline gauze is filled into the depths of the wound in such a manner as to insure gentle but firm pressure throughout. A sterile pressure dressing is then applied. No sutures are used in an attempt to close the defect. It is left wide open to facilitate drainage, just as every other war wound should be with the obvious exceptions of wounds of the brain and serous cavities. If the bone is fractured the extremity must be immobilized. In the ward, sulfonamide is continued orally. An initial dose of 3 gms. is repeated in two hours and 1 gm. is given every four hours for forty-

eight hours. The dosage is then reduced to 4 gms. daily and continued for several days.

Immobilization of fractured extremities is of paramount importance and should be instituted as soon after injury as possible. However, it should be clearly stated that a severe compound comminuted fracture of the humerus, femur or tibia with its accompanying loss of large muscle masses and residual loss of muscle tone, is distinctly different than its counterpart in civilian life. For these reasons strong traction is not required to maintain position in the severe war fracture. Rarely have we found it necessary to employ pins for this purpose. This observation is not new with us. It has been reported earlier by Trueta and by Colonel McFarlane, consultant to the Canadian Active Service Force. In the forward areas the Thomas splint has worked admirably in securing a fractured femur or tibia especially when adhesive traction was employed. Another method of immobilization of a femur, popular in the middle east, might be mentioned at this time. It is known as the "Tobruk plaster." Adhesive or elasto-plast traction is applied to both sides of the extremity and traction is maintained while a skin-tight plaster cast is applied from groin to toes with the foot at a right angle and knee in ten degrees of flexion. Holes are cut over the malleoli with padding placed over these bony prominences for protection and the traction straps exteriorized. A Thomas splint is then applied and secured with additional plaster. The traction straps are then attached to the splint in the usual way. The plaster is split from top to bottom, and this is essential if the patient is going to be moved.

In our hands plaster of Paris has afforded the best type of splinting. It offers the advantage of being readily molded into any desired form. It is applied over a light padding of sheet wadding, using felt to protect the bony eminences. A record of the dates of injury, operation and casting and diagramatic drawing of the type of fracture are then entered on the cast with indelible pencil. Fractures in the upper arm from the mid-humerus distally are immobolized in a circular cast using a plaster slab as the base for the splint. If there is marked swelling of the tissues, as in severe fractures in the condylar and supracondylar region of the humerus, a posterior molded plaster splint is applied and secured with a muslin bandage. A circular, nonpadded cast is definitely contraindicated in this type of case. Fractures of the upper humerus are immobilized in a plaster shoulder spica, or in a cast with the basic plaster splint extending up over the shoulder. An additional plaster anchors it to the shoulder and extends down onto the chest anteriorly and posteriorly. These splints are further secured to the body by wide adhesive tape. This immediately converts a litter case into an ambulatory one. A circular plaster cast, extending from groin to toes, is used for fractures below the knee. Fractured femurs are fixed in a well-molded plaster spica. In cases of trochanteric and femoral neck fractures a spica and half is applied. Splinted extremities are elevated in the ward and constant watch is kept for the first signs of circulatory impairment. If present, the cast is immediately split and spread throughout its length and the sheet wadding is cut, exposing the skin.

Casting insures rest, promotes healing and aids in the control of infection. Further it offers an occlusive dressing which is removed with difficulty. Frequent inspections and redressings only add to the contamination of the wound, at best. For these reasons we splint all large soft tissue wounds. Patients are promptly relieved of pain and are very grateful for the service. The casts are left on for a period of two to three weeks. Later reports on evacuated cases treated by the above closed plaster method show a relatively low incidence of osteomyelitis.

Casualties admitted from the front arrived, for the most part, in excellent condition. If the extremity was well splinted in plaster, x-ray showed the fracture in good alignment, and the patient's condition was satisfactory, the cast was not disturbed. If the splinting was inadequate, we promptly removed the cast, inspected the wounds and carried on further debridement if it appeared necessary, even when three or four days had elapsed since injury. The extremity was then immobilized in plaster. In examining these wounds a few lessons were learned, namely: (1) that sulfanilamide powder when used in excess was found to be caked in the wound acting as a foreign body and plug; (2) that sutures when removed released free-pus under tension in practically every case. It was also observed that casualties with fractures of the femur immobilized

in a well-fitting plaster spica traveled more comfortably than those in a Thomas splint.

Summary

Our methods of treatment do not present anything strikingly new. They are the surgical principles learned in the last War, practiced in the Spanish War and accepted in World War II. Briefly these principles are:

1. Control of shock.
2. Control of hemorrhage.
3. Control of infection by early thorough debridement and by oral use of the sulfonamides and local use of sulfanilamide crystals.
4. Use of vaseline gauze as a filler for gaping wounds; never as a firm pack.
5. Infrequent dressings.
6. Adequate plaster immobilization of all fractures and large soft tissue defects.
7. Elimination of primary wound closure.

THE CHALLENGE TO PSYCHIATRY IN THE POSTWAR PERIOD

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THE war emergency has brought to light many weaknesses of our national habits of living, and the current disruption has not only given an opportunity to study and appreciate them, but, with the reduction of standards of living to a minimum, will provide for a period of reconstruction in postwar years that should serve to correct these deficiencies and provide for a better world. One of the greatest revelations has been a definition of the problems of emotional health which stand out in bolder relief today than ever before.

The physical examinations of Selective Service inductees, brief and unsatisfactory as they may be regarded, have shown a cross-section of the physical and mental health on a national basis. As a civilian neuropsychiatrist the author studied an unselected sampling of 558 inductees appearing for examination at a Medical Induction Station at Fort Snelling, Minnesota. The data were assembled during fifteen separate visits between October 15, 1942 and February 15, 1943. During this period upwards of 50,000 men between the ages of eighteen and forty-five drawn from the North Central States, passed through the station. Of the sample, 310 were from rural areas and 248 from urban centers. Of this 558, 195 men (34 per cent), were rejected as incapable of meeting minimal military physical or mental requirements for army service. The bases for rejections are shown in Table I.

While the men with physical defects are of interest, time permits no more than passing comment on three groups that appear to have definite psychosomatic significance.

TABLE I

		Per Cent
Defective vision	37	6.6
Cardiovascular defects	27	4.8
Musculoskeletal	24	4.2
Miscellaneous—Hernia, Tuberculosis, Diabetes, et cetera	27	4.8
Gastric ulcer	15	2.6
Asthma	10	1.7
Psychiatric	55	9.6
	195	34

The cardiovascular group (twenty-seven) included those individuals with valvular heart disease, persistent acceleration of pulse rate, functional cardiac conditions, high blood pressure, etc. In talking with men presenting similar conditions, over a period of eighteen months, prior to the gathering of data upon which this paper is based, I was impressed with how frequently "nervousness" in other members of the family was reported. Recording of this factor in this series reveals that 26 per cent of the group described "nervousness," frequently of psychoneurotic type, present in other members of the family to such a degree as to require the services of a physician. Statistically this number is insignificant, but is of sufficient importance to warrant further study. Can there be a higher incidence of neuroticism in this group than is generally suspected?

The men rejected on grounds of gastric ulcer

Presented at the annual meeting of the American Psychiatric Association, Detroit, Michigan, May, 1943.

(fifteen) and asthma (ten) are of psychosomatic interest. In the gastric ulcer group three of the fifteen reported ulcers and five others mentioned psychoneurotic reactions in other members of the family. Six of the ten asthmatics reported asthma and/or psychoneurosis in the immediate family. Several of these individuals might have been disqualified on psychiatric grounds, in addition to the physical condition.

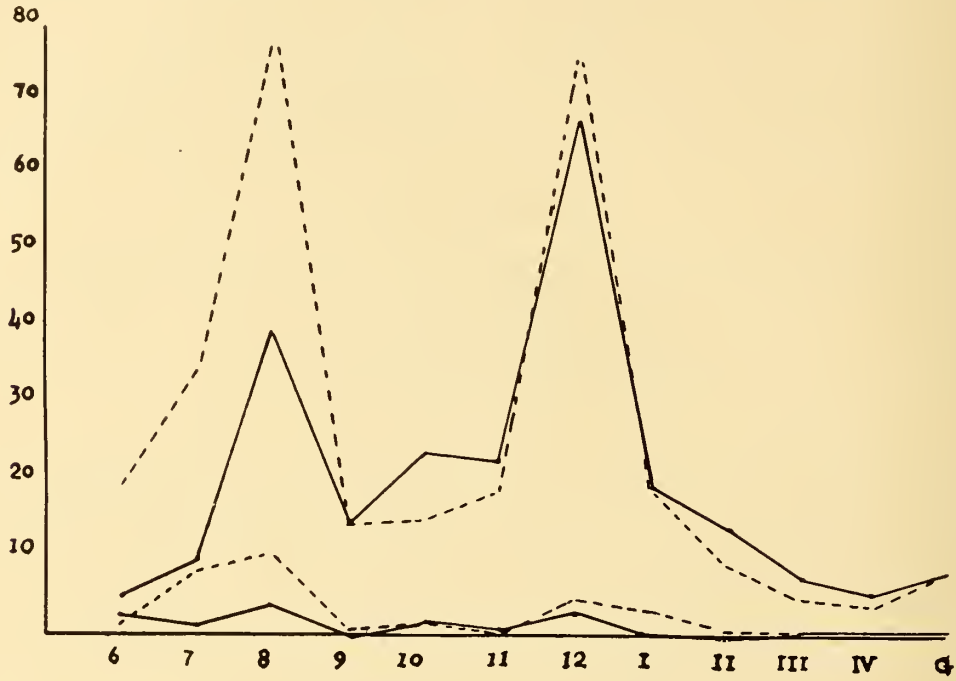


Chart 1. Graph of educational achievement of rejected group. Total rural, 242; psychiatric rejects, 34. Total urban, 305; psychiatric rejects, 20. Broken lines indicate rural group; solid lines, urban.

Those rejected on neuropsychiatric grounds are of particular interest. For purposes of clarification they were broken into two groups.

TABLE II

	Rural	Urban
Psychoneurotic	20	20
Psychopathic personality	2	2
Mentally defective	2	2
Encephalitis	1	1
Poliomyelitis	1	
Post-traumatic	1	
Schizophrenic	1	
Epileptic	1	1
	29	26

Table II is accurate for the period during which statistics were kept, but is misleading for the total period of selective service. During the early months of selective service the incidence of neuropsychiatric disorder was considerably higher, running at times to 35 per cent at this induction center. This may have been due to the drafting of the least essential members of each community in order to fill quotas. The total rejection rate in all physical categories was correspondingly increased. The incidence of mental defectives, deteriorated schizophrenics, psychopathic personalities, epileptics, alcoholics, and the neurological disorders was obviously higher in the beginning than it has been recently. These later figures represent individuals who were regarded as productive workers in their own community, yet the rate of rejection on neuropsychiatric grounds in this series remains higher than those rejected in any other category.

The educational achievement of those rejected for neuropsychiatric disorders showed that as a group they had been less efficient in school than the total sample. This discrepancy which was more apparent in those rejected from urban communities where the peak is reached at 8th grade with only a moderate spike at 12th grade and a sharp drop beyond is shown in Charts 1 and 2. The educational achievement of the entire sample, as shown in Chart 1, demonstrates this variation.

The age of the rejected group placed the greatest number in the rural group between the ages of twenty to twenty-four, with a sharp drop after this point. In the urban series the rise was slower, reaching the peak in the age group twenty-four to twenty-eight, remaining fixed until twenty-eight to thirty-two, after which there was a rapid decline in incidence. The age spread for the total group did not show a corresponding variation. One suspects that the neurotic characteristics are more obvious in the rural lad, who is at a greater disadvantage in the confusion of the induction station. While the younger urban group may possess the poise to mask the neurotic characteristics, these become more pronounced after encountering the vicissitudes of life for a few years. A review of the occupational experiences of the rural and urban rejectees strengthens this impression.

TABLE III

	Rural	Urban
Skilled workers with steady employment records	6	8
Skilled workers with irregular employment records	2	1
Unskilled workers with steady employment records	10	3
Unskilled workers with irregular employment records	11	13
Work record unknown		1
	29	26

This suggests that the neurotic individual's adjustment to society is better in the rural community than in the more complex urban life.

It is of passing interest to note in this same sampling, sixty-five (17.9 per cent) men of the 363 accepted for immediate service reported incidence of "nervousness" in other members of the family severe enough to necessitate medical care. This figure is sufficiently high to ask if adequate psychiatric care is being provided in the respective communities reviewed.

TABLE IV

Total Group	Total Accepted	Reported "Nervousness" in Family
Rural 310	211	34 (16%)
Urban 248	152	31 (20%)
558	363	

As these data represent a cross-section survey of total population, it is important as an indicator of the incidence of psychiatric disorder prevalent in this territory. However, it is by no means a total survey, for to it must be added the male population between the ages of eighteen and forty-five, who, because of incarceration in state hospitals, reformatories, schools for mental de-

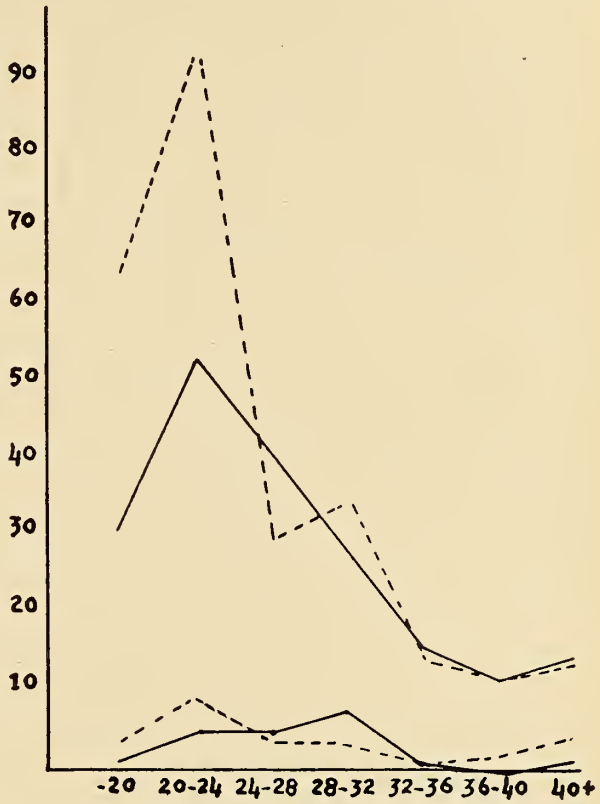


Chart 2. Graph of ages in rejected group. Total rural, 263; psychiatric rejects, 25. Total urban, 199; psychiatric rejects, 21. Broken lines indicate rural group; solid lines, urban.

fectives and epileptics, are not eligible for examination under Selective Service Act.

The men passing through this Medical Induction Station were from the North Central States. This territory, covering 233,000 square miles, has a population of slightly over 4,000,000 —five times the area of New York State and one-third of the population, but has one-twelfth the number of psychiatrists. Psychiatric services for this area consist of forty-seven psychiatrists as compared to New York's 579, listed as members of this Association and/or diplomates of the American Board of Neurology and Psychiatry. Of this number, thirty-eight are in full-time hospital positions, one has retired from practice, four are on the staff of private psychiatric hospitals, and the remaining four in private practice give volunteer part-time service to municipal hospitals. According to available

information, there is but one psychiatrist in private practice in North Dakota and no one in South Dakota.

In Minnesota, except in the State Hospitals, there is no psychiatric service outside Minneapolis, St. Paul, Duluth and the Mayo Clinic at Rochester. This distribution of service is characteristic of the nation, with the exception of the east and west coasts and the area about Chicago. Yet the Selective Service Survey, which is the first accurate survey ever made of the mental health of the territory, reveals that 55 per cent of our rejected men come from rural areas for whom no psychiatric service exists, unless the condition becomes so severe as to require commitment to a state hospital. In talking to the men rejected the majority have been under medical care which was directed at a symptomatic level that brought little relief.

The neuropsychiatric examinations at the induction centers are surprisingly productive, despite the lack of official figures. Scattered reports indicate many individuals passed develop psychiatric disorders under the stress of military life. If this apparent trend is verified, the challenge to psychiatry in the postwar period is defined more clearly than it has ever been previously. It is unfortunate that data obtained at the induction stations is not regarded of vital scientific importance and better utilized.

During World War I a huge amount of data was collected concerning the psychoneuroses of war. Unfortunately there was little carry over of this knowledge gained in the war years to civilian practice.

The advances made in the social sciences, however, sustained broad interest. Psychology found many new areas of application in education and industry. Psychiatric social work attained a new professional status. Psychiatric work with children developed rapidly. All of these resources existed prior to the war, expanded during it, and experienced the greatest impetus in the postwar years.

In the period between the wars, advancement in psychiatry for adults apart from State Hospital organizations occurred in three directions: (a) rapid increase in the number of psychiatric units as separate hospitals or as part of general hospitals, modeled on the original units in Ann Arbor, Baltimore, Boston and Albany; (b) research in universities and private and state hospitals; and (c) an increase in interest and emphasis in the teaching of psychiatry in most medical schools. In the last decade there has been an increasing interest in psychosomatic medicine. The increasing number of papers by outstanding internists and pediatricians on the psychosomatic components of such conditions as ulcerative colitis, asthma and endocrine imbalance are indicators of this recent trend in medical thought.

World War II has brought the opportunity to capitalize a reborn interest in psychiatry by the medical profession and the community. We cannot afford to again lose the opportunity to strengthen the position of psychiatry in the medical organization that existed after the last war. From the psychiatric standpoint we should work for three major objectives after the cessation of hostilities:

1. Meet the need for adequate psychiatric services for adults and children. There has been widespread publicity given the incidence of emotional disorders in men rejected at the induction centers and in the services. This has stimulated a demand by community leaders for extension of community service for diagnosis and treatment and prevention of psychiatric disorders.

2. Better orientation of practicing physicians. Medical men have been slow to utilize the specialized facilities at hand for the early treatment of the neurotic and mildly disturbed patient. The medical men in military service have developed a better understanding of psychiatric problems because of their experiences with psychiatric casualties. There must be a carry over of these attitudes into civil practice, and the development of resources and new facilities for prevention as yet untouched. Refresher courses, designed to attract the general practitioner to medical centers, should be encouraged.

3. The further expansion of the teaching of psychiatry in medical schools, in both undergraduate and postgraduate levels, so that it assumes a place of equal importance in the teaching program with the major divisions, and placing the emphasis on psychosomatic relationships. Experiment in the liaison type of teaching has been found most effective.

Facilities to meet the challenge of providing care are limited. In metropolitan areas, expansion of outpatient clinics with additional full-time salaried personnel is essential.

Provision of psychiatric service is badly needend for the large number of middle-class patients of modest income who cannot afford the cost of the psychiatrist in private practice, but who are ineligible for free clinics. The establishment of subsidized clinics, with a sliding scale of payment, is worthy of consideration. Such organizations would undoubtedly have to grow from private philanthropy, for these patients are excluded from Community Chest supported agencies. Government and university experimentation is prohibited, as the development would appear to infringe on the rights of private practice.

While there has been a steady gain in psychiatric units as separate hospitals or divisions of general hospitals, the value of this service is often curtailed by the brevity of the period of hospitalization, with discharge of the patient occurring before convalescence is complete. Provision of additional bed space to permit longer periods of hospitalization is desirable. For the patient who reaches a point where the restrictions of the hospital are no longer beneficial, there is need of an intermediary convalescent program. The type of organization developed by Dr. John Millet, and recently taken over by the Lake George Foundation at Tratelja Farms, would seem a logical solution that would go far in the program of rehabilitation.

In many states, the State Hospital Service functions under the handicap of general impoverishment of facilities. Tragedies such as the recent food poisoning at the State Hospital in Orgeon, are grim reminders of how vulnerable the parsimony of legislators can make the care of the mentally ill. While efforts to improve the quality of the service have been made for over a hundred years, there are still many weak spots that should be corrected.

The solution to these problems can be neither easy nor rapid. It can proceed only at a rate acceptable to the medical profession and the general public. Increased emphasis on instruction in psychiatry will eventually show its effect as the students become practitioners, but this alone cannot accomplish the change, nor can we afford to wait that long. I believe that the general medical group would be receptive to suggestions that seemed practical, for the psychoneurotic who becomes chronic causes them much concern and discomfort. The backing of the state and county medical groups is the starting point. In talking before various societies there has been a genuine interest, although not always complete acceptance of psychiatric approach.

The psychiatric program in the metropolitan areas, particularly along the Atlantic seaboard, about Chicago and in California should be the least of our anxieties in an association such as this, for in these communities there is wealth, interest and prestige to carry through the program.

While psychiatric facilities in the majority of the larger cities across the continent, as represented by Syracuse, Buffalo, Cleveland, Detroit, Cincinnati, St. Louis, New Orleans and the Twin Cities, et cetera, are well organized, the service usually is confined to their respective metropolitan areas. Psychiatric units that serve the entire state in connection with medical schools, like those in Minnesota, Iowa and Colorado, are exceptions to the general rule. If my figures presented at the beginning of this paper are characteristic of other sections of the country, no psychiatric service exists for a large percentage of the nation's population.

The smaller communities do not have a sufficient volume of cases to offer a living to a psychiatrist. Traveling clinics fail to meet the need because constant movement makes it impossible to offer more than a diagnostic service. Follow-up visits for treatment must be spaced too far apart to be satisfactory. Transportation to urban centers is expensive, cumbersome and hard on the patient. Outpatient clinics attached to state hospitals do not seem to be the answer. The state hospital has been identified too long with the care of the frankly psychotic to win easy acceptance of the group of borderline psychoneurotics in smaller communities where every move becomes community gossip. A plan of subsidized psychiatric centers established in connection with hospitals in the smaller communities which are natural focal points, seems logical. Both in-patient and out-patient service for children and adults could be developed with such subsidiaries as social service, occupational therapy, and provision for convalescent care. The development would of necessity require the sponsorship of the local medical society as well as the state government. The initial establishment would again have to come from private philanthropy. It would no doubt be expensive, but the investment would seem justified when one con-

siders the wastefulness economically and socially that the present lack of facility entails.

In the Child Guidance field some clinics have been sponsored by private endowment in communities considered too small to justify the establishment of a clinic. The Child Guidance Clinic of the Martha Beeman Foundation at Niagara Falls, New York, serving a community of 25,000, has found its case load comparable to that of clinics in much larger communities, and occupies the full time of a psychiatrist, psychologist and social worker. Experimentation along these lines would usher in a period of psychiatric service for the psychoneurotic group that to date is largely ignored.

Summary

The postwar period offers a great challenge to psychiatry. In metropolitan areas, existing facilities must be expanded and strengthened. Resources for those of modest income, denied access to the free clinics and unable to afford the services of the psychiatrist in private practice should receive consideration. Additional psychopathic hospitals for the borderline types, with provision for convalescent care to supplement hospital service, is indicated. Teaching programs of psychiatry in medical schools that would grant this subject a status of equal importance to other branches of medical science are essential. Research, already initiated, and concerned with both the causes and treatment of mental disorder, must proceed on a wider and more intensified basis. Perhaps the greatest challenge to psychiatry is the provision of psychiatric service for the smaller communities and rural territories, where selective service has indicated a high incidence of psychoneurotic disorder, for which no resource for treatment exists.

DETAIL MAN

Personally, we like most "detail men." In case you haven't had contact with one recently, may we refresh your mind on the subject? Were we *Linnaeus* we might describe him thus: Genus: Homo Sapiens; Habitat: Distribution almost universal, but becoming scarcer in Middle West due to the draft and lack of enforcement of game laws. (Most Dox think there is a perpetual open season on these chaps.) Description: A hardy perennial. (Webster's definition of perennial: "continuing or enduring through the year or many years.") And, Boy, does he continue to endure a lot!

Further Description: This sub-order of Homo Sapiens not infrequently is married, and sires one or more little detailettes who depend upon the parent shrub for food and raiment. He has the customary complement of manual and pedal appendages; also, two ears, two eyes, two lungs and believe it or not—a heart.

Usually he is a gentleman, which in itself is saying a lot. Obviously this rare specimen has an inexhaustible fund of patience, otherwise he would not be willing to cool his heels in your reception room for long periods of time, awaiting your willingness and readiness to see him for five minutes. He knows, of course, that in order to impress him with your importance, he will have to sit on his quadriceps in the outer sanctum until you get darn good and ready to admit him to your august presence.

He is a non-poisonous plant. Contact with him engenders no long and lingering ailment. He may be touched with impunity. (In fact, we have known instances where he was "touched" for several dollars worth of valuable samples, simply for the asking.) He is odorless and tasteless, but is not, as we have implied, without feeling. He may be, at his worst, the rambler type of plant, in that he rambles on past the few minutes allotted to him, but still he cannot be classed with Rhus Toxicodendron or the Spiny Cactus.

Often he is addicted to tobacco, but unless you first light a cigarette, usually he will refrain from doing so while in your presence. He knows from long and bitter experience that while *he* is non-toxic, some Dox can be poisonous as toad stools—especially to "detail men."

So if you see one of these roving, self-abnegative, hard-working, patient and pleasant fellows beginning to take root in your reception room, for Heaven's sake have the girl bring him in before he becomes a permanent potted plant before your very eyes. Because all of you know how much easier it is to dispose of cut flowers than a jardiniere full of flowering hydrangeas.

But seriously, Fellows, let's give these boys a break. We are busy, of course, but not *too* busy to spare a few minutes of our time when it easily might be of mutual benefit. Ever hear of the Golden Rule? Think it over sometime; it will do you good.—J. PHIL. EDMUNDSON, M.D., *in Jackson County Medical Society Weekly Bulletin.*

CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

J. B. Arey, M.D., and D. H. Taylor, M.D., Pathologists

Presentation of a Case

Dr. Peterson: This is the case of a fifty-five-year-old male negro who was admitted to the Minneapolis General Hospital on December 6, 1943. His complaints were of dyspnea and orthopnea of about one year's duration; some palpitation had been present for about nine months. During the eight months prior to admission he had lost his voice, and over a period of six to eight months anorexia and a 10-pound weight loss had been noted. Edema of the legs had been present for about one month. Two days prior to admission he had coughed up a small amount of blood-tinged sputum. Inasmuch as the patient seemed confused as to the chronological order of his symptoms, further history was obtained from his physician. It was found that the patient had seen another physician in December, 1942, at which time an x-ray of his chest revealed some widening of the left upper mediastinum. The Wassermann reaction at that time was positive, and oral mercury therapy and later a short period of intramuscular bismuth therapy were instituted.

The patient was seen by a second physician in May, 1943. Fluoroscopy of the chest at that time revealed what appeared to be an aortic aneurysm, and this impression was confirmed by x-ray. The aneurysm was said to be located between the transverse and the descending aorta, and pulsations were visible on fluoroscopy. A repeat x-ray was reported to show no evidence of intrinsic pulmonary disease. He was treated with bismuth and intravenous sodium iodide until October, 1943.

Physical examination on admission to the hospital revealed an emaciated, acutely ill man, having a temperature of 97.6, pulse 82, respirations 20 and blood pressure 115/70. He was somewhat lethargic and orthopneic. He spoke in a husky whisper as a rule, but at times hoarse voice sounds were audible. The pupils were small and reacted to light. Examination of the chest revealed no visible or palpable apex impulse. On percussion the heart was found to extend 9 cm. to the left of the midline in the fourth to sixth interspaces. There was also dullness in the second to fourth left interspaces, about 6 cm. out from the mid-sternal line. On auscultation the heart tones were distant and muffled; no murmurs could be heard. Except for dullness along the sternum over the left upper lobe the lungs were normal to percussion. On auscultation crepitant rales were audible over the left apex and the breath sounds were diminished along the sternum in this area. Except for four plus edema of the lower legs and thighs the remainder of the physical examination was essentially negative.

Laboratory examinations revealed a positive Rytz, Kline and Wassermann. The hemoglobin was 67 per cent, red cell count 3,500,000, white blood count 72,000 (checked) with 96 per cent neutrophiles, 2 per cent lymphocytes and 2 per cent monocytes. The white cells showed moderate toxic changes, and an occasional atypical monocytoid cell was noted. Although the possibility of a malignant lymphoblastoma was suggested, this could not be definitely established by means of the peripheral blood. Repeated urinalyses were essentially negative. The plasma proteins were: albumin 2.45 grams per cent, globulin 3.4 grams per cent. The sputum was negative for acid-fast bacilli on two occasions. The stools showed two plus positive guaiac on admission, but were negative on three occasions thereafter.

The patient had an afebrile course throughout his hospital stay, the temperature never rising above 97.8. He went rapidly downhill and died on the sixth day after admission.

Dr. Stenstrom: This is the first x-ray of the chest, taken on December 6, 1943. At this time there is very marked widening of the mediastinal shadow. From examination of this film alone, it would be difficult to determine whether we are dealing with a mediastinal tumor or an aneurysm of the descending aorta. Accordingly, this lateral film was taken. In this we can now distinguish two distinct masses. One mass apparently directly overlies the ascending aorta, the other overlies the heart; neither mass is associated with the descending aorta. This makes the possibility of tumor probable, and tends to rule out an aneurysm.

Autopsy

Dr. Arey: The left pleural cavity contained about 250 c.c. and the right 500 c.c. of clear straw-colored fluid. The pericardial sac contained about 1,500 c.c. of serosanguineous fluid. There was a large tumor mass anteriorly in the left upper lobe of the lung. This invaded the visceral pleura anteriorly, and was not visible from the posterior surface. The tumor mass had invaded the pericardial sac, extending between the root of the aorta and the pulmonary artery. There was no involvement of the intima of the large vessels. The bronchi were followed out and ran directly into the tumor mass, the exact point of origin from the bronchi thus being no longer demonstrable. On section, large areas of necrosis were present within the tumor mass.

The root of the aorta showed very slight dilation, but this was not sufficient to warrant the diagnosis of aneurysm. There was minimal separation of the commissures of the aortic cusps, but no thickening of the valves; grossly, a diagnosis of syphilitic aortitis could not be established. The two masses seen on x-ray thus are explained as a primary bronchiogenic carcinoma of the left upper lobe and a pericardial effusion. There was no aneurysm of the aorta. The remainder of the autopsy showed nothing of note. Therefore, the only explanation we have for the high white count is the extensive necrosis within the tumor. The peripheral edema is explained on the basis of the low plasma albumin, but the reason for the latter is not clear.

Microscopic Sections

Dr. Arey: Here is a section of the root of the aorta. Notice the marked lymphocytic infiltrate, not only in the serosa, but also in the media. In the latter area the infiltrate is principally perivascular.

Here is a section of the tumor of the lung. Notice the large areas of necrosis. Although there are no areas of cornification, under the microscope the cells appear to represent squamous epithelium. There is no attempt at glandular formation. The tumor is thus considered a squamous cell bronchiogenic carcinoma.

Discussion

Dr. Taylor: As to the incidence of primary carcinoma of the lung, in a long series of cases most recent figures show these neoplasms to comprise anywhere from 6 to 10 per cent of all primary cancers. Many authors feel that the incidence of primary carcinoma of the lung has increased absolutely in late years. Part of this increase, however, is undoubtedly due to better diagnostic procedures. The increased incidence of carcinoma of the lung in the autopsy series at the University of Minnesota is due to the recognition as carcinoma of the lung of tumors formerly classified as mediastinal sarcomas. There has been no absolute increase of carcinoma of the lung in the Pathology Department of the University of Minnesota. In any event, primary carcinoma of the lung must now be considered, as regards incidence, in the same class as the more commonly recognized cancers, such as those of the stomach, uterus, breast and rectum. At the University of Minnesota, bronchiogenic carcinoma now ranks sixth in frequency among malignant neoplasms.

Primary carcinoma of the lung occurs far more frequently in the male than female, the ratio in a collected series of 5,121 cases being 80 per cent male and 20 per cent female. This is in sharp contrast with the sex incidence of benign bronchial adenomas, the latter occurring predominantly in females. As to age incidence, 80 per cent of all carcinomas of the lung are said to occur between the ages of forty and seventy. However, cases of primary carcinoma of the lung have been reported from the first to the ninth decades.

Other intrathoracic tumors which must be considered in the differential diagnosis of primary carcinoma of the lung should be briefly mentioned. These include metastatic carcinoma and sarcoma, bronchial adenoma and chondroma, all of which may involve the pulmonary parenchyma. The mediastinum may be involved by hygromas, fibromas, teratomas and malignant lymphoblastomas. As in the present case, aneurysms of the aorta must also be considered in the differential diagnosis. Lastly, pleural endothelioma may be confused with primary bronchiogenic carcinoma at postmortem, as well as clinically.

The macroscopic classification of primary pulmonary carcinoma varies with different authors. All seem to agree, however, that the tumors arising at the hilus of the lung are the most common. The other macroscopic classifications include diffuse or infiltrating forms, in which involvement of an entire lobe may simulate a pneumonic process, nodular parenchymal or intermediary type, peripheral and miliary types.

Microscopically, primary carcinomas of the lung are divided into squamous cell carcinoma, adenocarcinoma and small cell or oat cell carcinomas. The squamous cell tumors are the most frequent forms, and may or may not show islands of cornification. The adenocarcinomas are usually only poorly differentiated. The small cell tumors are second in frequency and may be confused with sarcomas or lymphoblastomas. In addition, a few primary pulmonary carcinomas are reported as arising from alveolar epithelium. These may be confused with interstitial pneumonia.

The clinical characteristics of primary pulmonary carcinoma depend upon certain pathological features, and these may be conveniently considered as follows:

1. *Obstruction.*—The signs and symptoms of obstruction depend upon the degree of closure of the involved bronchus or bronchi. With complete obstruction there are signs of atelectasis of the corresponding pulmonary parenchyma. With partial obstruction, however, emphysema, bronchiectasis, repeated pneumonias and lung abscess may result.

2. *Ulceration.*—Ulceration of the bronchial epithelium may result in cough with the expectoration of blood-tinged sputum or frank hemoptysis. Some blood-streaked sputum is said to occur in 40 per cent of primary bronchiogenic carcinomas.

3. *Invasion and Displacement of Space.*—Certain pulmonary tumors are so situated as to involve the brachial plexus and cervical sympathetics, with resultant pain in the shoulder and arm and the appearance of Horner's syndrome (Pancoast tumor). Other results of this invasive tendency are phrenic or recurrent laryngeal nerve paralysis, dyspnea (also a result of obstruction, effusion, et cetera), dysphagia from esophageal involvement, displacement of the heart and mediastinum and effusion from pleural involvement.

4. *Metastases.*—Primary bronchiogenic carcinomas may metastasize by way of lymphatics, blood stream, or both. The site of metastases, in order of decreasing frequency, is given by Simons as regional lymph nodes, liver, lungs, bones, kidneys, adrenals, pleuræ, brain, pericardium, etc. In this regard it is important to emphasize the fact that in any patient developing signs of brain neoplasm, a source should first be sought for

(Continued on Page 376)

CLINICAL-PATHOLOGICAL CONFERENCE

ST. LUKE'S HOSPITAL—DULUTH

Arthur H. Wells, M.D., Pathologist

Presentation of a Case

Dr. R. H. Puumala: This forty-nine-year-old housewife gave birth to a full-term normal baby boy after a spontaneous delivery without a physician's prenatal or postnatal care. She died five days later. A midwife estimated the loss of blood at from 750 to 1,000 c.c. at the time of delivery. She had had edema of the legs and noticed some scotomata and other visual disturbances for a few days. There had also been some nausea and vomiting. She passed a small amount of urine shortly after delivery, following which there was a complete anuria until the time of death.

She was first seen by a physician eight hours after delivery when her blood pressure was found to be 172/118, and pulse 110. On the following day it was noticed that she had developed a generalized edema. She was admitted to the hospital two days before death. Her blood pressure had risen to 200/135. Although quite cheerful she was orthopneic and perspiring profusely. There were congested râles in the bases of the lungs. Her heart tones were of fair quality, rapid, regular and 110 per minute. The abdomen was distended and tender. There was a pitting edema of ankles and some generalized edema of the subcutaneous tissue. Her temperature was 99.6°. A catheterized urine specimen had 4 plus albumin, 1 to 3 red blood cells per high powered field and insufficient quantity for specific gravity test. The white blood count was 42,950 and the following day 26,050. A red blood count was 2,400,000 with hemoglobin 5 grams. Blood urea nitrogen was 93.75 mgs., nonprotein nitrogen 120 mgs., creatinine 4.5 mgs., plasma uric acid 9.41 mgs., serum albumin 3.42 mgs., globulin 2.69 mgs. and fibrinogen 0.65 mgs. per 100 c.c. The carbon dioxide combining power was 36 volumes per cent. Intravenous glucose and digitalis failed to break the anuria and the patient died five days after delivery.

She had had five living children and three stillbirths, all without medical care. Five years previously following a miscarriage at seven months her blood pressure was 172/120 and temperature 99.2°. There was an aching pain and moderate tenderness over the left kidney and grade 4 pus in the urine. A diagnosis of pyelonephritis was made. The physician was not called for further care.

Dr. J. R. Manley: The diagnosis is bilateral cortical necrosis of the kidneys. A patient of mine with this condition was reported in the literature in 1927.

Autopsy Findings

Dr. A. H. Wells: The principal findings were in the kidneys each of which weighed 360 grams. Their capsules stripped with slightly increased resistance leaving a nonscarred smooth outer surface with an unusually dull yellowish opaque color with small scattered islands of blood red ranging up to 8 mm. in diameter. The cut surfaces revealed the same opaque yellowish color typical of infarction involving practically the entire cortex and the columns of Bertin. The medullary margins of the necrotic area had a thin reddish streak obviously due to hemorrhage. There was a similar hemorrhage in spotty areas under the kidney capsule. The pyramids were slightly pale but otherwise not unusual. Pelvi, ureters and urinary bladder had no injection or dilatation. The visible renal arteries had no significant changes.

This forty-nine-year-old woman weighed approximately 200 pounds and measured 67 inches. She had a rather severe edema evidenced on the surface as a moderate pitting edema of the ankles and dependent portions of the trunk. There was also some fullness about the eyes and in the subcutaneous tissues along the anterior incision as well as in loose connective tissues throughout the thorax and abdomen. The abdominal cavity contained 300 c.c. of clear, straw-colored fluid and the pleural cavities were obliterated by old fibrous adhesions. There were evidences of moderate toxic changes in the myocardium, liver and spleen. The right lung weighed 750 and the left 600 grams due to a moderate diffuse congestion and edema throughout all lobes.

Microscopic Study.—The principal lesion in the kidneys appeared to be in the intralobular arteries and arterioles. Here there was a decided splitting, swelling and fraying of the walls with slight diapedesis of red blood cells into and through the walls. The lumina of these vessels were dilated and filled with clumps of red blood cells, rather than typical antemortem thrombi. These clumps of cells had fused in some vessels into extremely acidophilic staining masses. There was a complete necrosis of all tissues in the cortex with the exception of an occasional narrow mass immediately under the capsule and immediately adjacent to the medulla. The remainder of the cortex had a typical appearance of an infarct with a general preservation of architecture and a representation of the

tissues by "shadow forms." The marginal zones of the cortex revealed varying degrees of degenerative change of the various structures plus rather extensive hemorrhages in many of the glomeruli. Tubules were engorged with red blood cells, some of which appear to be in clumps and others fused into deep acidophilic staining masses similar to those found in the small arteries and arterioles. Occasionally there was some proliferation of the cells of Bomen's capsule. A few of the glomeruli and tubules were not unusual. Azo-carmine stains revealed no thickening of the glomerular capillary walls and there was no significant neutrophilic infiltration excepting a moderate reaction at the margins of the infarcted areas. The collecting tubules had only mild evidences of toxic change and contained many hyaline and granular casts with occasional red blood cell casts. The heart, liver, and spleen had moderate evidences of toxic change of a secondary type but no evidence of injury to blood vessels.

Dr. W. A. Coventry: Is this condition limited to pregnant women?

Dr. R. H. Puumala: Of the seventy-one authentic cases collected from the literature by Duff and Murray in 1941 there were forty-eight cases or approximately two-thirds in women in the latter months of pregnancy. In the remaining one-third of the patients there were a great variety of associated diseases and circumstances which might well have something to do with the onset of the bilateral cortical necrosis. These consisted of scarlet fever, diphtheria, tonsilitis, pneumonia, tuberculosis, malaria and dysentery. There were also associated possible chemical influences in a few cases including alcohol, almond extract, camphor, local anesthetic, cobra venom and thyroid extract. One case followed immediately after an auto accident and symptoms of traumatic shock. Another followed two weeks enforced dehydration. Three cases in the literature had no apparent antecedent disease or event which might have attributed to the disease. Among the cases associated with pregnancy it has been found that a premature separation of the placenta with hemorrhage and stillbirth occurs in the majority of the cases. There were a few cases with preëclamptic toxemia and almost 50 per cent of the women suffered from headaches and visual disturbances for several days preceding the anuria. In the great bulk of cases the anuria develops on the day of delivery.

Dr. R. F. Schmidt: May the clinical diagnosis be established before death?

Dr. A. H. Wells: Among the several cured cases reported in the literature there is one reported by Arthur Crook in which the diagnosis was established by a biopsy at the time of decapsulization of the kidney. The principal feature of the clinical manifestation is an anuria or an extreme oliguria leading to death within a period of from four to twelve days in the majority of cases. Extra renal causes of anuria and bichloride of mercury poisoning must be ruled out. The other clinical features of bilateral cortical necrosis result from a progressive azotemia with no characteristic change in the blood pressure, generally a low-grade fever and a leukocytosis of from 14,000 to 40,000. There is generally some nausea and vomiting with tenderness in the epigastrium and in the loins. The patient remains mentally clear until terminal drowsiness progresses into coma. At this time there may be uremic twitchings. A small quantity of urine obtained may have much albumin, many red blood cells, white blood cells and casts.

Dr. F. R. Peterson: It is my understanding that the cause of this condition is not known? Have there been any applausible theories presented?

Dr. A. H. Wells: It is fairly generally agreed that the cortical necrosis is the result of a block of blood flow through the intralobular arteries and arterioles. This may be a spasm of these vessels of such duration as to cause the necrosis or it might well be an injury of these vessel walls by some innoxious substance resulting in thrombosis of their lumina. Since there is practically no evidence of the same vascular changes in other organs in the body one must assume a remarkable idiosyncrasy in these small arteries and arterioles of the kidneys. The problem as to whether a spasm or a thrombosis of these vessels represents the original lesion must be settled in the future. It is well known that staphylococcal toxin will cause identical lesions in the cortex of rabbit kidneys. Similar lesions have been developed in the experimental animal with the use of vasopressin. The occurrence of a case immediately following traumatic shock is also of considerable importance in evaluating etiologic factors.

Your attention is called to the mystery surrounding the etiology of certain cases of acute yellow atrophy of the liver, acute hemorrhagic pancreatitis and necrosis and hemorrhage of the adrenal cortex.

Anatomical Diagnosis.—(1) Bilateral cortical necrosis of kidneys; (2) Recent postpartum status; (3) Possible toxemia of pregnancy; (4) Uremia; (5) Possible hypertensive disease; (6) Cardiac hypertrophy.

CLINICAL-PATHOLOGICAL CONFERENCE

Minneapolis General Hospital

(Continued from Page 374)

in the lungs. A number of cases of supposed primary cerebral neoplasm have been subjected to surgery, only to discover following histological sections that the primary source of the tumor is in the lungs.

Final Diagnoses: (1) Squamous cell carcinoma of left lung; (2) extension to visceral pleura and parietal pericardium, (3) syphilitic aortitis, (4) bilateral hydrothorax, (5) pericardial effusion, (6) chronic passive congestion of liver (mild).

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1. Bell, E. T.: A Textbook of Pathology, Philadelphia: Lea and Febiger, Fifth Edition, 360-363, 1944.
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President's Letter

MEDICAL SERVICE FOR SOLDIERS' WIVES AND BABIES

One of the most important actions taken by the House of Delegates at Rochester this year was a resolution proposing a complete alteration in the basis for extending government financed medical and hospital aid to wives and infants of servicemen.

It should be noted for the record that Minnesota was not the first state to rebel against the Children's Bureau regulations set up for this program. In fact, while a good many state medical associations fought against the regulations from the start, here in Minnesota we elected to give the program a fair trial, no matter how unpalatable the regulations might be, relying upon official assurance that it was an emergency program and hoping, in any case, that it might work.

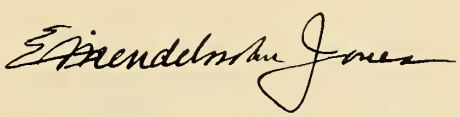
The decision reached in Rochester to terminate our coöperation on June 30, 1944 (end of the fiscal year), and to set in motion a concerted national effort to change the basis of the program, is not, therefore, evidence of any stubborn or uncoöperative spirit on the part of medical men in Minnesota.

The truth is that the program, after due trial, has not proved satisfactory either to wives or servicemen or to the doctors. New regulations providing for care of intercurrent conditions, some of which are certain, as in orthopedic conditions, to involve prolonged and expensive service, have brought the general dissatisfaction to a head. And the fact that current appropriations expire on June 30, at which time Congress will again be required to act on the whole program, makes action on the part of medical associations at this time both necessary and entirely proper.

Every member is urged to read the resolution passed by the House of Delegates initiating this action, as it appears in the Medical Economics section of this issue. It is the result of much sincere investigation and consultation with participating physicians and with representatives of veterans' organizations in the state and represents the convictions of all who have taken any part in the initial attempt to make the current program a success.

It goes without saying that the Minnesota State Medical Association and its individual members are wholly in accord with the intention back of the program of aid for wives and babies of enlisted personnel in the Armed Forces. The question has never been: Shall we aid them? But: How shall the aid be given? It goes without saying, also, that, while negotiations for a better plan are being carried out, the doctors of the state will give the best care in their power to all who need it, regardless of regulations or fees.

In the meantime, the thanks and appreciation of every member should be extended to the committee under chairmanship of Dr. R. L. J. Kennedy which has worked so hard and faithfully, against odds, over a period of more than two years to adjust arbitrary regulations of the Children's Bureau into a workable plan for Minnesota. The fact that Dr. Kennedy was selected as representative to present, for Minnesota, a new plan based upon allotments rather than service, at Congressional committee hearings in Washington this month, is witness of the confidence reposed in him and the committee by the Council and the House of Delegates of the Association.



President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

THE 1944 ANNUAL MEETING

THE attendance of 1,447 physicians at the annual meeting of the Minnesota State Medical Association at Rochester in April was an indication of no let-down in the interest of the members in scientific medicine and organizational affairs. The number exceeded the attendance at Rochester three years ago.

The use of the Reference Committee system again enabled the House of Delegates to transact its business expeditiously without barring discussion of any item contained in a committee report by any delegate so inclined.

The proceedings of the House of Delegates, as well as the scientific papers, will be published in due time in Minnesota Medicine. There are certain items worth noting at this time, however.

Two Distinguished Service Medals of the Association were awarded by the House of Delegates on recommendation of the Council. The one to Dr. Willard F. Burnap of Fergus Falls was "in recognition of his many years in the honorable practice of medicine in Minnesota and of his faithful service to the Association as president and member and chairman of its Council and as leader in organized medicine." The other to Dr. William F. Braasch was "in recognition of his distinguished contributions to scientific medicine and of his faithful service to organized medicine as president, member of the council, committee chairman of the Association, and as Delegate and Trustee of the American Medical Association."

The Treasurer reported a satisfactory financial status with an increase in income of over $6,000, compared with 1942, and a net surplus of over $7,000 of income over expenditures for the year 1943, in spite of a large percentage of the members being in service and nonpaying for the duration.

Dr. Braasch, chairman of the State Procurement and Assignment Committee, reported that before the war, there were some 3,200 physicians in practice in the state, not including 300 in public health work, and that 1,400 have now gone into the service. As a result, there is a dearth of physicians which is felt more keenly in the rural districts. Of those who volunteered, 295 were rejected and fifteen have been discharged from service because of physical disabilities. Three hundred and forty-four fellows and first assistants have entered the service from the Mayo Clinic, which constitutes about 60 per cent of the medical personnel. Some replacements have been made from among those rejected by medical boards. Since January, 1942, more than 1,000 officers in the service have been assigned to the Mayo Clinic for special training.

Dr. A. J. Chesley, Executive Secretary of the State Board of Health, reported a loss in his department of twelve physicians and of sixty-five other personnel to the services. Inasmuch as there have been in recent years about twenty deaths from tetanus each year, the Board is recommending combined diphtheria and tetanus toxoid vaccinations for routine use. Acting for the Children's Bureau of the Federal Government, the State Board of Health received applications from 6,596 wives of enlisted men between July 1, 1943, and March 1, 1944, for maternal benefits. No provision having been made by the Federal Government for additional office help, delay in handling the cases has resulted.

The delegates were informed by Dr. A. W. Adson, member of the new AMA Council on Medical Service and Public Relations, that the Council has opened an office in Washington for the exchange of medical information with Dr. G. L. Kelly as secretary. For the time being, the Council has obtained the services of Dr. Joe Lawrence, who has had experience as representative of the Medical Society of the State of New York at Albany in establishing the Washington office. The Council feels assured that the Public Health League consisting of several medical associations of the far West and the Association of American Physicians and Surgeons with headquarters in Gary, Indiana, both of which are planning to establish offices in Washington, will abandon these plans when the new AMA Council is established in Washington.

One of the resolutions passed by the House of Delegates related to the attitude of Minnesota doctors to the Emergency Maternal and Infants Care program for the benefit of wives and infants of enlisted men. Present regulations, which are to be in effect until June 30, are unsatisfactory to physicians and recipients in that they provide only ward accommodations in hospitals. The payment of specified fees directly to the attending physician eliminates the service of a specialist in obstetrics, as he is not permitted to make an additional charge. The resolution states that whereas Minnesota physicians are willing to coöperate with the present regulations until June 30, they propose that after this date, the aid given the wives of servicemen be in the form of an allotment to the wife with no strings tied to its use and that it be distributed through the usual allotment channels instead of through the various State Health Departments, thus effecting an economy in administration.

Vice-Admiral Ross T. McIntire, Surgeon General of the Navy, was unable to take part in the program, but his place was ably filled by Captain Don S. Knowlton of the U. S. Navy Medical Corps. Captain Knowlton gave an interesting address on "Surgery in the South Pacific," and also entertained the guests at the banquet in a most able manner.

The medal presented annually by the Southern Minnesota Medical Association for the best scientific exhibit by individual physicians was awarded this year to Dr. L. G. Rigler, Dr. H. L. Kaplan, and Captain Daniel Fink for their exhibit which set forth the result of clinical studies on the relationship of pernicious anemia to benign polyps and carcinoma of the stomach.

The delegates elected the following officers for 1945: Dr. E. L. Tuohy, Duluth, president; Dr. S. A. Slater, Worthington, first vice president; Dr. J. A. Bargen, Rochester, second vice president.

The following were re-elected: Dr. B. B. Souster, Saint Paul, secretary; Dr. W. A. Condit, Minneapolis, treasurer; Dr. W. W. Will, Bertha, speaker of the house; Dr. E. A. Meyerding, Saint Paul, vice speaker; Dr. L. A. Buie, Rochester councilor, First District; Dr. L. L. Sogge, Windom, councilor, Second District; Dr. H. J. Elias, Duluth, councilor, Ninth District; Dr. W. A. Coventry, Duluth, AMA delegate; Dr. J. C. Hultkrans, Minneapolis, alternate; Dr. A. W. Adson, Rochester, AMA delegate; Dr. W. A. Burnap, Fergus Falls, alternate; Dr. E. W. Hansen, Minneapolis, AMA delegate.

The annual meeting in 1945 will be held in Saint Paul.

DISTINGUISHED SERVICE MEDALS PRESENTED

THE presentation of the Distinguished Service Medal of the Minnesota State Medical Association to Dr. W. L. Burnap and Dr. W. F. Braasch at the Rochester meeting carries with it a special significance to those who have followed closely the history of the state association.

Both Dr. Burnap and Dr. Braasch have served in all of the offices in the gift of the association during their long service to organized medicine and both have carried their vision and their awareness of the need of new policies to meet the changing times into the field of effective national action.

It is interesting to note that a new spirit came into being in organized medicine here in Minnesota with their emergence into the responsibilities of office. The state association which had up to that time been almost exclusively a scientific organization, became aware of social as well as scientific problems and responsibilities. It became adult as a public body and matured in its conception and methods of protecting standards of healing and safeguarding the public from fraud.

Indeed, if one were to select a turning point in the policies of the Minnesota State Medical Association which has since assumed so important a role in public affairs in Minnesota, it would certainly be during the years when both of these men served in close succession as presidents of the association.

That Minnesota has since achieved an outstanding position among the states in matters of public health is due in great measure to their energy and vision and to the high standard which they and their colleagues set for the conduct of association affairs.

It should be noted, also, that both played major roles in the movement, outside the state, which led to the establishment of the Council on Medical Service and Public Relations a year ago by the House of Delegates of the American Med-

ical Association and eventually to the creation of the Bureau of Medical Economic Research for the representation of medicine and medical interests of the people in Washington, D. C.

Others, of course, have been closely associated in all of these new movements in medicine. But the House of Delegates at the Rochester session did well to single out these two men for special honor this year and every member will concur in the decision of the delegates that they are worthy to join the small group of distinguished men in Minnesota who have received the Distinguished Service Medal of the association.

George Earl, M.D.

NEED FOR STRONG REPRESENTATION IN WASHINGTON

THE Emergency Maternity and Infant Care program, some phases of which were mentioned in an editorial in our January issue, entitled "Maternity Assistance for Soldiers' Wives," shows the difficulties with which the medical profession is confronted in influencing regulations adopted by governmental bureaus which are charged with carrying out laws passed by Congress.

In this particular instance, the Children's Bureau charged with the administration of this program established the fee schedule for each state, dictated that physicians' fees and hospital payments must be made directly to the recipients, and regulated the various provisions for consultants' fees and medical care for complications. The effect of the regulations was that soldiers' wives who availed themselves of the provisions of the law are provided with ward beds and not private rooms, and are not enabled to have the care of obstetricians whose fee is more than the $35.00 to $50.00 allowed. There is said to be nothing in the law that restricted this service in this way.

In brief, the administration of the law has been the source of considerable irritation to the medical profession and doubtless to the recipients of the benefits, a situation which could have been avoided with some coöperation on the part of the Children's Bureau. While the Bureau has an Advisory Committee with medical members, this committee was not asked for any recommendations as a unit, and was of little or no value to the Bureau. The Bureau, in short, by its procedure in publicizing the program to the servicemen in the camps before it was presented to the doctors who would furnish the service, smacked of sharp practice. There seems no reasonable doubt but that the Bureau deliberately attempted to embarrass and discredit the medical profession.

The autocratic procedure of the Children's Bureau in this matter is taken, and rightly so, as a good example of the need of strong medical representation in Washington. Whether the gathering of all governmental medical activities under one administration in Washington would lessen the need is problematic. There would still be the Bureau units, some of which might still show autocratic tendencies.

The suggestion has been made by the Editor of the *Illinois Medical Journal,* that we should have a nationwide committee that would offer its advice and coöperation in any bureau entrusted with the administration of a medical program. It is further suggested that the new Council on Medical Care and Public Relations could, when the occasion arose, call a meeting of representatives of all states and territorial medical societies and departments of health, which the bureau head could be invited to attend. We can conceive of important measures affecting medical practice coming up in Washington from time to time in the future. Such a conclave of representatives of medicine from each state would serve to attract public attention and could make its influence felt. However, while you may lead a horse to water you cannot make him drink, and it is conceivable that a Bureau head might refuse to attend such a meeting, or, attending, refuse to take advice. However, it is true that most such officials are high-minded, earnest citizens, desirous of administering their programs in the best manner possible. The suggestion is worth consideration on the part of the Council.

FIFTH WAR LOAN DRIVE

OUR war against aggression must be paid for in some way. Many are making their contribution by the supreme sacrifice. Others are working overtime in war industries. All are being taxed, but taxation alone is not sufficient to raise the billions of dollars needed to carry on the

(Continued on Page 384)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

PASSED BY THE DELEGATES

Several actions of considerable significance to the immediate outlook of medicine in Minnesota were taken by the House of Delegates at the Rochester session.

Vote for Enabling Act

One authorized the Committee on Public Policy to prepare for introduction at the next session of the State Legislature, an Enabling Act which will permit the organization of nonprofit plans for prepaid medical service in Minnesota.

The subject was opened for discussion by the Committee on Sickness Insurance which suggested in its report to the delegates that such action might be timely and should be considered at this meeting. The committee did not report any acute need or demand for prepayment plans in the state, at the present time, but felt that the need might arise in the future, at a time when the Legislature was not in session.

The sentiment of the delegates as expressed in several quarters was obviously in favor of moving toward establishing the necessary machinery.

Recent experience of the Wisconsin State Medical Society was reported by Dr. R. M. Kurten of Racine, the Wisconsin society's president, who attended the meeting.

"It is our belief, based upon several trials, that county plans must have state direction," Dr. Kurten declared. "We believe, also, recent experience of Milwaukee county physicians in selling an industrial plan there, has shown that physicians themselves should not do the selling.

The Milwaukee society recently established a plan for 800 employes in a pressed steel plant, Dr. Kurten explained. The doctors themselves went out to sell the policy to the workmen in March. But only 147 contracts have been sold so far.

There was to be a meeting in Milwaukee shortly, he said, to determine whether or not the plan should be extended to other plants. The original plan of procedure was to leave the organization and operation to the Milwaukee society with the state stepping in only as the plan might be enlarged to include other counties. This, he believes, is a mistake: all such plans should originate on the state level.

The failure of the Milwaukee plan to sell readily falls in line with experience elsewhere and shows that the public will have to be sold on prepayment plans as on other forms of insurance protection.

"It seems to me, however, that an enabling act permitting you to organize plans of your own is necessary," he said, "and should be passed at the earliest possible opportunity. You may regret it later if your legal machinery is not available."

Basic Study Approved

An important directive was asked and given by the delegates to the new Committee on Nervous and Mental Diseases at this meeting to study basic measures for the control of moral imbeciles and border-line psychotics who are potential criminals.

The ultimate objective, according to Dr. J. C. McKinley, chairman of the committee, will be to make recommendations which can be incorporated into the law and which will be corrective rather than palliative in the future handling of this grave social problem. The committee was given carte blanche in the matter and its immediate program looking toward better organization, equipment and medical staffs for state hospitals was also accepted.

Immunization Pamphlet to Be Published

The problem of vaccination and immunization was forcefully brought to the attention of the delegates by Dr. E. J. Huenekins, of Minneapolis, chairman of the Committee on Vaccination and Immunization and also by Dr. E. L. Tuohy, of Duluth, chairman of the Committee on Public Health Education, and president-elect of the association. Dr. Tuohy called attention to the need for more intensive work on the part of all county medical societies to see that young children are protected against all preventable diseases. Dr. Huenekins asked for and received approval of the delegates for publication of a pamphlet to be given to all mothers before they leave the hospitals explaining the need for preventive measures and indicating the proper time for such measures. The association will cooperate with the State Board of Health in issuing the pamphlet.

EMIC Program Rejected

The most crucial action taken at the meeting was undoubtedly passage of the resolution calling for a change in the basis for extending medical and hospital aid to wives and infants of enlisted personnel in the armed forces. This program has been before the House of Delegates twice before, the first time in Duluth in 1942 and the second in Minneapolis in 1943.

In both of these instances a program for Minnesota which would conform to regulations of the Children's Bureau on a complete service basis was presented by Dr. R. L. J. Kennedy of Rochester, chairman of the Committee appointed by the Council to study the matter, and accepted by the Council and the delegates. Changes in the regulations from year to year necessitated each new deliberation on the part of the association and the intent and purpose of the association to assist in making the program a success was clearly in evidence at each point in the negotiations.

Dissatisfaction Expressed

At the same time, experience with the program was accumulating. The arbitrary character of Children's Bureau regulations, the discrimination as to maximum fees between the states, even in this area, the dissatisfaction of many soldiers' wives with the restrictive character of the benefits were leading inevitably toward a demand for a change in the character of the program. Furthermore, the clear implications of the program as a forerunner, in spite of official assurances to the contrary, of future peacetime programs of the same sort have troubled physicians and others, from the start.

When, for the third time, it was necessary to present modifications of the program to the House of Delegates this year and when, to arrive at these modifications, it was necessary to secure the opinion of representatives of several special groups, the demand for a change became irresistible. Representatives of several veterans' organizations joined in the demand. As a result, a committee, representing the specialties concerned in obstetric and pediatric care, and in care of intercurrent conditions, presented the resolution printed below which was passed unanimously by the Delegates.

As indicated in the resolution, coöperation under the present plan will terminate on June 30, 1944, when the present appropriation expires.

Committee hearings on the new appropriations have been scheduled in Washington beginning April 27. Obviously, this is the time to get congressional approval for a change in the basis for the program and every effort will be made by the association in coöperation with other states to persuade Congress to place the entire program on an allotment basis whereby soldiers' wives will be able to make their own arrangements for medical and hospital service.

RESOLUTION

WHEREAS the program now in operation for maternal and infant care for wives and infants of enlisted men in the four lower grades is unsatisfactory to the medical profession, and

WHEREAS the emergency provisions for the carrying on of the program as now in operation expire June 30, 1944, be it therefore

RESOLVED that the Council and House of Delegates of the Minnesota State Medical Association recommend that the medical profession coöperate with the present program until its expiration date on June 30, 1944, but also urge Congress to abandon the program as now constituted on that date, and be it further

RESOLVED that under any new program after June 30, 1944, the benefits be designated supplemental aid and take the form of an allotment for medical, hospital, maternity and infant care, similar to the allotments already provided for the maintenance of dependents, leaving the actual arrangements with respect to fees to be fixed by mutual agreement between the enlisted

man's wife and the physician of her choice, and be it further,

Resolved that the American Medical Association be urged to present to the appropriate committees of Congress a concrete plan embodying this principle, to the end that the present and ultimate best interests of the wives and infants of men in service be served during the present emergency.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. DuBois, M.D., Secretary

Saint Paul Couple Given Ten-year Sentences in Narcotic Case

Re: State of Minnesota vs. Frank Paul Ferraro.
Re: State of Minnesota vs. Gertrude Ferraro.

On March 20, 1944, Frank Paul Ferraro, thirty-eight years of age, 378 Kellogg Blvd., Saint Paul, Minnesota, was sentenced to a term of not less than two and not more than ten years at hard labor in the State Prison at Stillwater, by the Hon. Carlton F. McNally, Judge of the District Court of Ramsey County. Ferraro had pleaded guilty to an information charging him with attempting to obtain narcotic drugs by fraud and also to a previous felony conviction.

Ferraro was arrested by police officers on March 14, 1944, following his attempt on March 10, 1944, to obtain twelve ¼-grain morphine sulphate tablets from the Liggett Drug Stores at Fourth and Robert Streets and Seventh and Robert Streets in Saint Paul. Ferraro called the drug stores and represented himself as "Dr. Gardner" and ordered the morphine for an alleged patient. Neither drug store was taken in by the attempted fraud, but instead notified the Police Department. Ferraro was identified from pictures of well-known drug addicts and his arrest followed. Ferraro has a previous record of having been sentenced to nine months in the Minneapolis Workhouse in April, 1936, for violation of the Harrison Narcotic Act and in March, 1938, was sentenced to eighteen months in the Federal Prison at Leavenworth, Kansas, for a violation of the Harrison Narcotic Act.

Mrs. Ferraro, thirty-one years of age, wife of Frank P. Ferraro, was sentenced on March 27, 1944, by Judge McNally, to a similar term of not less than two and not more than ten years in the Women's Reformatory at Shakopee, for illegal possession of narcotic drugs. Mrs. Ferraro was arrested on March 16, 1944, when she was found loitering near the Ramsey County Jail with a note in her possession from an inmate of the Jail, warning her that a hypodermic syringe and two needles had been discovered in her husband's cell. Subsequent investigation disclosed that Mrs. Ferraro had obtained two narcotic prescriptions from a physician at Ellsworth, Wisconsin, and she still had in her possession one morphine tablet.

Mrs. Ferraro has a previous criminal record of sixty days in the Saint Paul Workhouse in December, 1935, for shoplifting; nine months in the Minneapolis Workhouse in May, 1936, for violating the Harrison Narcotic Act; eighteen months in the Women's Reformatory at Shakopee, in March, 1938, for a similar violation, and eighteen months in the Women's Reformatory at Seagoville, Texas, in January, 1941, for a violation of the Harrison Narcotic Act.

The medical profession is warned to be on guard against such individuals attempting to get any of the derivatives of opium, either by way of prescription or dispensing on the part of physicians. These individuals are not entitled to receive any narcotic drugs because they are actuated by an attempt to satisfy their addiction rather than the seeking of treatment for any ailment.

Minneapolis Physician Pleads Guilty to Violation of Harrison Anti-Narcotic Law

Re: United States of America vs. Donald Laing Peterson, M.D.

On March 8, 1944, Donald Laing Peterson, M.D., thirty-five years of age, 2901 4th St., S.E., Minneapolis, entered a plea of guilty in the United States District Court at Minneapolis, to an indictment charging him with two violations of the Harrison Anti-Narcotic Law. The first of these counts alleged that on or about the 6th day of December, 1943, Dr. Peterson unlawfully had in his possession twenty hypodermic morphine sulphate tablets one quarter grain each. The second count alleged a like offense on December 14, 1943. On March 25, 1944, Dr. Peterson was placed on probation by Judge Gunnar H. Nordbye for a period of three years upon condition that Dr. Peterson "leave Minneapolis, Minnesota, on March 29, 1944, and proceed directly to the United States Public Health Service Hospital at Lexington, Kentucky, to remain there for treatment of drug addiction until discharged therefrom as cured."

Dr. Peterson, who graduated from the University of Minnesota in 1933, and formerly practiced at Fargo, North Dakota, was arrested on December 15, 1943, by agents of the Federal Bureau of Narcotics following the discovery of twenty narcotic prescriptions written by Dr. Peterson between November 21, 1943, and December 15, 1943, for a total of 340 ¼ grain morphine sulphate, and which morphine was diverted, illegally, by Dr. Peterson to his own use. Dr. Peterson is the first physician to be indicted in Minnesota during the past several years for a violation of the Harrison Anti-Narcotic Law. However, Dr. Peterson was warned on several occasions by the Federal Bureau of Narcotics to refrain from the use of derivatives of opium; notwithstanding that fact, Dr. Peterson continued to use morphine and to issue fraudulent prescriptions in order to obtain it. Under the circumstances, the Federal Bureau of Narcotics had no alternative except to have Dr. Peterson indicted.

Dr. Peterson has been cited by the Minnesota State Board of Medical Examiners to show cause on May 12, 1944, why his license as a physician should not be revoked because of habitual indulgence in the use of narcotic drugs.

Minneapolis Druggist Pays $500 Fine for Illegal Sale of Nembutal

Re: State of Minnesota vs. Edward Langer

On March 21, 1944, Edward Langer, thirty-seven years of age, entered a plea of guilty in the District Court of Hennepin County, to selling nembutal without a physician's prescription. The Hon. Levi M. Hall sentenced Langer to pay a fine of $500 or serve six months in the Minneapolis Workhouse. Langer paid the fine.

Langer, a registered pharmacist who operates the Lincoln Drug Store at 401 Nicollet Ave., Minneapolis, was arrested on March 14, 1944, following an investigation by the State Board of Pharmacy, in the course

of which investigation Langer made two sales of nembutal to an informer for the State Board of Pharmacy. On each occasion Langer sold six capsules of nembutal without first obtaining from the purchaser a prescription from a physician authorizing such sale. This law has been in effect for the past five years and forbids the sale of barbital or any derivatives of barbituric acid from being sold in any drug store without a written prescription from a physician and surgeon, dentist or veterinarian, as the case may be. Such a prescription cannot be refilled, "except with the written or verbal consent of the prescriber." The druggist refilling the prescription must endorse such consent on the original prescription. In the case of verbal consent "it must be direct from the prescriber to the said pharmacist." In this respect the Minnesota State Board of Medical Examiners wishes to warn the medical profession that complaints have been received that some physicians have been permitting their office help to authorize refills of such prescriptions. This is a violation of the law and subjects the physician and his employes to liability thereunder. This law is going to be enforced and the penalties for a violation of it are severe, the maximum fine being $1,000 and the maximum jail sentence being one year. Several deaths have been reported from the excessive self-administration of various barbital preparations. In order that there may be no complaint about physicians or their employes violating this law in the future, there is published below in connection with this article that portion of the law that pertains to the medical profession.

"PRESCRIPTIONS—REFILLS.—For the purposes of this act, a prescription for barbital is void unless (1) it is written in ink and contains the name and address of the person for whose use it is intended; (2) it states the amount of barbital to be compounded or dispensed, with directions for its use; (3) it contains the signature and address of the prescriber, and a designation of the branch of the healing art pursued by the prescriber, and (4) it shows the date when signed by the prescriber. Every licensed pharmacist who compounds any such prescription, shall at that time, mark it in ink so as to show that it has been compounded, and the date thereof, and he shall retain such prescription in a separate file for a period of not less than two years, open to inspection by any officer of the state, county or municipal government, whose duty it is to aid and assist with the enforcement of this act. No such prescription shall be refilled, except with the written or verbal consent of the prescriber, provided that the date of such consent must be recorded, in ink or indelible pencil, upon the original prescription by the pharmacist who refills the said prescription together with the name of said pharmacist, and provided further, that in event of verbal consent it must be direct from the prescriber to the said pharmacist. Every such pharmacist shall distinctly label the container with the directions contained in the prescription for the use thereof, and the following warning: 'USE ONLY AS DIRECTED.'"

"DOCTORS MAY PRESCRIBE.—(1) A licensed doctor of medicine, or a licensed doctor of dentistry, in good faith, and in the course of his professional practice only, may prescribe, administer, and dispense barbital, or he may cause the same to be administered by a nurse or interne under his direction and supervision."

Sec. 3906-14 and Sec. 3906-15, Sub. 1, of Mason's Minnesota Statutes for 1927, 1940 Supplement.

For the Phthisic—Take four ounces of hen's fat and a seed bowl of skunk cabbage that grows at the bottom of the leaves close to the ground, cut it fine, stew it in the fat till it is dry, strain it off. A teaspoonful is a dose to take three times a day. Make a syrup of white swamp honeysuckle blossoms and queen of the meadow roots, sweetened with honey; add to it a quart of syrup and half a pint of brandy. From *Herbal,* published in 1780 by John Williams.

Communication

To the Editor:

The National Naval Medical Center of Bethesda, Maryland, is endeavoring to collect for its archives a complete set of commissions issued to Naval medical officers, and signed by past Presidents of the United States.

There is a small nidus now at the Center and it is hoped to be able to build this up to completion. Through the Navy Department Library and the National Archives a few more have been located. I am wondering whether you would care to insert a small item in your journal to this effect, with the idea that various libraries or individuals may have in their possession such old commissions and would be willing to turn them over to the Center. If such are found and the owners are so generous, there could be no more fitting enshrinement to them than their use for this purpose.

Any assistance that you and the journal can extend will be greatly appreciated by the Surgeon General.

With best regards.

Sincerely yours,
ROBERT C. RANSDELL
Commander (MC), USNR
Division of Publications

Fifth War Loan Drive

(Continued from Page 380)

war. Although it is mortgaging the future to issue bonds which future generations will have to pay, that is the only way the war can be financed. After all, the purchase of a War Bond is an investment with the capital and interest return as assured as is possible.

The Fifth War Loan Drive will begin June 12, closing July 8. The goal is $16,000,000,000 of which $6,000,000,000 will be sought from individual investors.

The response of the American people to the first four War Loan Drives has been most remarkable. Total sales aggregate 87 billion dollars and more than 55,000,000 Americans own at least one bond. 27,000,000 wage earners are putting 10 per cent of their pay into bonds.

The War Loan Drives have received widespread support. Advertisement of the drives has not cost the Government a nickel. Because so many citizens contribute their time and other assistance, War Bond Sales cost the Government only one cent for every $33.00 raised. The Government must have the continued support of citizens in the forthcoming Fifth War Loan Drive.

Minnesota Academy of Medicine

Meeting of March 8, 1944

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minnesota Club, Saint Paul, on Wednesday evening, March 8, 1944. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the vice president, Dr. A. G. Schulze.

There were forty-six members present.

Minutes of the February meeting were read and approved.

Upon request of Dr. Strachauer, his name was transferred to the Senior list of members.

Dr. A. R. Colvin also requested that his name be placed on the Senior membership list, and this was voted to be so changed.

The secretary read a letter from Dr. Thomas S. Roberts stating that the reason he had not been at the meetings lately was that he had been ill. It was suggested that the secretary write a letter to Dr. Roberts from the Academy.

Dr. Schulze announced that since the last meeting, the Academy had sustained a great loss in the death of an old and valuable member, Dr. Arnold Schwyzer, and after conferring with the Executive Committee he was appointing the following Necrology Committee to draw up a memorial to Dr. Schwyzer: Drs. A. R. Colvin, H. R. Zimmermann, and Martin Nordland. A motion was made, seconded and carried that the Academy send Mrs. Schwyzer a bouquet of flowers in memory of Dr. Schwyzer.

The scientific program followed.

Dr. Creevy, of the Department of Urology in the Medical School of the University, read his Inaugural Thesis. Lantern slides were shown, such as Dr. Creevy uses in his lectures to medical students.

Dr. Creevy: I am, of course, very much gratified at having been elected to this society, but was somewhat disturbed that the word "amateur" was not included in the title of my paper on the printed program, especially when I discovered that one of the best medical photographers in the country was to run the projector.

AMATEUR CLINICAL PHOTOGRAPHY IN UROLOGY

C. D. Creevy, M.D.

Minneapolis, Minnesota

No one questions seriously the value to medical education of visual methods of instruction. The old statement "a good picture is worth ten thousand words" comes to mind in this connection. Visual instruction takes many forms, but I am concerned at the moment with the use of lantern slides, particularly in color, in undergraduate medical education. While not as entertaining as motion pictures in Kodachrome, they are far less expensive, require less cumbersome equipment in the making and projection, and lend themselves better to the demonstration of many things such as instruments, visible lesions, diagrams, pathological specimens, x-rays, and the like. A specific advantage of the "still" slide over the motion picture is that it permits that leisurely study of an individual scene or subject which is so important in the process of learning.

Properly collected, indexed and used, slides enable the clinician to show to the students in vivid form and at any time, cases which may be seen only rarely in the clinic. This is of immense importance in a small urological service, whence the student is likely to get the impression that prostatism and urology are synonyms unless he spends a long time on the service, or unless visual aids are used. The advent of Kodachrome film has made permanently available for teaching an enormous amount of material hitherto lost except to small groups of students who happened to be "on service" at the right time.

It is obvious that the physician's convenience would be served best by having a capable photographer available constantly, but expense makes this impractical for most of us. Using a professional photographer in any other way is less satisfactory in that many lesions, specimens, and operations will be missed because of inability to bring photographer and subject together at the proper moment. A reasonably satisfactory substitute is found in amateur photography by the physician who thus accumulates much useful clinical material while indulging in a pleasant, if expensive, hobby. The main difficulty is to find time for the purpose, but after a moderate amount of experience the time required is not great, provided one can resist the temptation to invade other branches of photography, particularly the taking of portraits, the processing of film, and the making of prints and enlargements, since it is here that an enormous amount of time is likely to be spent. It is a real advantage to be able to make a permanent record of any interesting lesion at a moment's notice and without the necessity for any planning or arranging. The fact that the patient need not wait or return for a photograph permits the making of many which would not otherwise be possible.

The physician-photographer need never look far afield for pertinent subjects; it is surprising how willing most patients are to pose, particularly if the purpose of the picture is explained. As a matter of fact, the average human, dissemble though he may, is usually anxious to be photographed and to see the result. In addition to visible lesions, one may with profit record such things as x-rays and pathological

specimens, both gross and microscopic, although photomicrography in color is an art in itself. Operations are intriguing subjects, particularly if the surgeon is interested, although, unfortunately, it is hardly practical for the surgeon to photograph his own performance. The amateur photographer may readily convert to his own uses any illustration in an article, or any exhibit at a medical meeting, as well as original material such as charts or drawings. A few enthusiasts even photograph whole articles or the bibliographies thereof for future reference, although such service is available at slight cost from professional sources, as is the now well-known "microfilming" of clinical records and of x-rays in the interests of conservation of storage space.

The selection of equipment presents knotty problems, particularly in time of war, but much can still be had, although at rather disturbing prices. My own preference is for a camera which utilizes thirty-five millimeter film, chiefly because of the low cost of the film and the handiness of the camera and its accessories. The use of larger film is not only more costly, but involves cumbersome equipment and usually a special room or studio, while the thirty-five millimeter equipment may be kept in the office. An added advantage of the small film is the small size of the slides; large numbers of them may be stored in a small space or carried without inconvenience to meetings. Moreover, the Leitz desk viewer permits careful individual scrutiny of the 2x2-inch slide without resort to a projector and screen. Such equipment is not available for the larger slides. Another advantage which is of interest only to those who make their own black and white slides, lies in the fact that one may photograph the negatives on roll film and mount the resulting positives in lantern slides, with a considerable saving of time as compared to the individual printing of each slide.

There are several disadvantages to the small camera and film, however: prints for publication must be made by enlargement; a special projector must be carried along because the thirty-five millimeter variety is rarely available at meetings and, when available, may be of poor quality; a third weakness is that a whole roll of film is processed at one time, precluding special treatment of individual subjects. Where one is not concerned with artistic effects, this is not too serious, especially since, except in the case of color film and to some extent there, this problem can usually be solved by making several exposures of each subject.

My own preference is for the Leica, chiefly because by virtue of an attachment charmingly named the "Nooky," it is the only camera with which one may make hand-held close-ups of small areas, avoiding the necessity of a tripod. The Nooky permits focussing at short distances with the range finder of the camera without time-consuming focussing on ground glass and fumbling with plates which is necessary with so many large cameras. When equipped with a homemade mount with two R2 photoflood bulbs, this device eliminates the need for lights and reflectors on standards, and the too numerous trailing wires over which the beginner inevitably trips. The tripod and floor lights can also be avoided in photographing larger areas by using a flash gun. Thus the equipment is highly mobile and readily taken to the subject. The flash is of great help in photographing children who decline to hold still, because very short exposures, 1/200 to 1/1000 of a second, are thus made possible.

Equipped with a device known as the "Speed-O-Copy," a vertical sliding mount, and a horizontal x-ray viewing box with a removable opaque cover, one may easily cope with pathological specimens, instruments, x-rays, diagrams, and the like. Of value in minimizing the glaring highlights which usually characterize amateur photographs of wet specimens are a polaroid filter on the lens of the camera, and a diffusing screen of glass cloth in front of the lights.

The one real defect in the Leica is that it does not come with an interchangeable back like that of the Kodak Ektra. This device permits one to change from color to black and white film without wasting film or engaging in troublesome rewinding.

A reliable exposure meter of the photoelectric type is absolutely indispensable, particularly for Kodachrome film.

I have used Kodachrome wherever possible because one buys the processing with it. The familiar "ready mounts" in which the film is returned can be projected to ascertain the quality of the photograph, and then easily mounted in a protective cover. There is, however, one serious disadvantage inherent in all color film so far: the range of light intensities which can be recorded faithfully in a single scene is very much smaller than with black and white film. This not only limits the types of subjects for which Kodachrome can be used, but makes accurate exposure imperative. As a consequence the beginner spoils far more film when he uses Kodachrome, but the end results are well worth the trouble and expense.

A long and diligent trial has convinced me that Kodachrome in roll film form is ill suited to black and white subjects both because of its limited range and because of variations in processing, especially during the war. For these, ordinary black and white film is used, although with regret because of the time required for developing and printing, which usually cannot be delegated with safety to commercial agencies.

I do not propose to go into the details of technique both because I do not believe that they would be of interest to you, and because my own ideas are still nebulous. All the necessary data can be found in the excellent pamphlets published by Eastman, and in the well-known Leica Manual, which is probably the most expansive catalog of equipment ever published. Moreover, much helpful advice is always available from other amateur photographers and from conscientious photographic dealers, many of whom are accomplished photographers.

The slides illustrate that I am simply an enthusiastic beginner, very much in the learning stage. Despite this obvious fact, I believe that these slides, and many others like them, are of real value in medical teaching; in-

creasing experience can hardly fail to yield better results.

Discussion

Henry Morris, U. of M. (by invitation): Dr. Creevy is to be congratulated on his photographic work. I have watched him and think he has done marvelously. The 2x2 slide, I think, is the one that is coming in. In a one-man photographic shop such as I have, you just can't satisfy all who want work, one can satisfy only a few individuals. If each man, as Dr. Wangensteen and Dr. Creevy have done, would take it upon himself to make these small pictures, he would have aid in teaching. As Dr. Creevy said, it is rather simple; one of the main things is the source of light, certain temperatures, and checking right along. The photoelectric meters have a tendency to slide off in value. In regard to color, I see men who like the yellower ones, and some like those on the blue side; some like blue, green, or various backgrounds, i.e., just the opposite color; but I still think black is best and makes a good background. The 2 x 2 makes a quicker slide, as you don't have to copy it. Some say it costs only 15 cents, but it really comes to more than that, because you may take three or four in order to be sure of a good one, so it does cost something. Dr. Creevy has taught me a whole lot.

Dr. O. H. Wangensteen, U. of M.: For several years I have been hearing from the students that Dr. Creevy is the best undergraduate teacher in the Medical School. A number of years ago, I went into some of Dr. Creevy's lectures somewhat surreptitiously to see how he did it. It was obvious to see why the students liked the clarity of Dr. Creevy's method. With his material well in hand and from a few brief notes, he covered the subject matter systematically and with emphasis proportionate to the importance of each item. Dr. Creevy's informal presentations to students are characteristically lucid and clear, exhibiting often the finish which one expects to find only in a manuscript. One may recognize readily the divisional shifts in his treatment of the presentation of the subject matter; the paragraphic arrangement is apparent and frequently even punctuations, such as use of the comma, colon, semicolon, and period can be identified. I have been unable to decide how much of this is gift and in what measure Dr. Creevy deliberately has cultivated it. In a recent discussion relating to the study of Latin, a number of us were astonished to hear Dr. Creevy reel off without hesitation the whole first paragraph of Caesar. Many a teacher's muddled thinking leaves the student confused and muddled concerning what the teacher said. Is it any wonder that his method, though it has too few imitators, has been very popular with the students?

Dr. Creevy has latterly seized upon the agency of photography to lend even more emphasis to his graphic methods of teaching. The virtue of the method is apparent. I take it as a compliment to the Department of Surgery that Dr. Creevy, with his numerous other duties, takes his teaching responsibility so seriously. Without additional help he has found time to do all this splendid photography for teaching purposes.

May I amplify briefly upon Dr. Condit's comment? In our medical teaching here in America we have relied too much upon the spoken word. In England, considerable emphasis is put upon the value of the museum. When Colonel Loyal Davis, a member of the Medical Military Commission to Russia, visited here recently, he expostulated at some length on the value placed upon the use of visual aids in education. Those of you who visited Dr. William Boyd, Professor of Pathology, when he was at Winnipeg (now of Toronto), know to what good and effective purpose a museum can be put in teaching. During his leisure hours, the student finds study in a well-appointed museum instructive as well as interesting. The fagged and tired student disinterested in further reading, finds browsing in the museum fascinating and stimulating. When the Medical Library and Museum is built upon our medical campus, it is to be hoped that each teaching Department of the Medical School will have adequate space allocated in which properly arranged visual exhibits may be available to the student throughout the day.

The visual image makes a more lasting impression upon the learner than the spoken word. The latter is ephemeral and is forgotten, and evaporates like ice in the desert.

Dr. A. R. Colvin, Saint Paul: Dr. Creevy's presentation of his subject and the illustrations have been most interesting and, as an adjunct in the teaching of students, must be very valuable. While the study of pathological and clinical pathological material is valuable, this material is not always available. And this is especially so in clinical conditions. Dr. Creevy's work would, under such circumstances, be most valuable.

I had an experience at the end of my third student year that seems to be germane to the subject. My preceptor had opened a scrotal abscess and the next day went away for a holiday and left me to take care of the patient. Very shortly a urinary fistula was evident, and the inexperienced student was up against it out on the prairie without the possibility of assistance. However, my preceptor's library contained a work on urology, in which the cause and course of urethral fistulæ was exhaustively dealt with. The author, in speaking of treatment, said that occasionally an indwelling catheter would sometimes cure the condition; it did in this case. And that was nearly my undoing.

But he further said that occasionally the fistula would close and break open a number of times until finally the scrotum was indurated and riddled with fistulous tracts. And when the patient urinated, urine escaped from all these openings. And he named the condition "watering pot scrotum."

At the final clinical examination in Surgery my fellow students all came back from examining a scrotal condition saying they saw a condition with which not one of them was familiar. My turn came last and after hearing the lamentations of my fellow students, you can imagine my feelings when I at once recognized a "watering pot scrotum." When the professor asked me what the condition was I said, as if it were a common one, that it was an old "watering pot scrotum." He just beamed on me and asked me to tell him all about it and how to treat it. Of course, my experience had been burned into my consciousness, and I knew all about it. My near undoing came when he asked me how to treat it. I told him to use an indwelling catheter. I saw instantly the bright beam covered by a cloud coming over his countenance, and when he said—Is that what I taught you? I replied of course that would be only a temporary expedient, and that a median perineal urethrotomy should be done.

I am sure that when I was asked to accept a surgical internship it was because of the actual seeing of a clinical pathological condition. If the rest of the class had been shown on the screen an illustration of "watering pot scrotum," and told about it by a teacher of Dr. Creevy's attainments, they would have been able to recognize the case I have talked about.

Dr. Creevy, in closing: I have nothing more to add except to thank those who discussed the paper.

The meeting was adjourned.

Erling W. Hansen, M.D.
Secretary

Minnesota State Medical Association

ROSTER 1944

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Mrs. E. Mendelssohn Jones.....*Fourth VicePresident*.....Saint Paul
Mrs. E. W. Miller.....*Recording Secretary*..... Anoka
Mrs. Lloyd Dack.....*Corresponding Secretary*.....Saint Paul
Mrs. Henry W. Quist.....*Treasurer*..... Minneapolis
Mrs. R. V. Sherman.....*Auditor*.....Red Wing
Mrs. George Penn.....*Historian*..... Mankato
Mrs. J. S. Reynolds.....*Parliamentarian*..... Minneapolis

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Revisions—Mrs. Neil Dungay.....Northfield
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DISTRICT NO. 1

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Counties — Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona.

DISTRICT NO. 2

L. L. Sogge, M.D.....Windom
Counties—Cottonwood, Faribault, Jackson, Martin, Murray, Nobles, Pipestone, Rock, Watonwan.

DISTRICT NO. 3

C. M. Johnson, M.D.....Dawson
Counties—Big Stone, Brown, Chippewa, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, Meeker, Pope, Redwood, Stevens, Swift, Traverse, Yellow Medicine.

DISTRICT NO. 4

A. E. Sohmer, M.D.....Mankato
Counties — Blue Earth, Carver, Le Sueur, McLeod, Nicollet, Renville, Scott, Sibley, Waseca.

DISTRICT NO. 5

E. M. Hammes, M.D.....Saint Paul
Counties—Anoka, Chisago, Dakota, Isanti, Kanabec, Mille Lacs, Pine, Ramsey, Sherburne, Washington.

DISTRICT NO. 6

A. E. Cardle, M.D.....Minneapolis
Counties—Hennepin, Wright

DISTRICT NO. 7

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Counties—Aitkin, Beltrami, Benton, Cass, Clearwater, Crow Wing, Hubbard, Koochiching, Morrison, Stearns, Todd, Wadena.

DISTRICT NO. 8

W. L. Burnap, M.D.....Fergus Falls
Counties—Becker, Clay, Douglas, Grant, Kittson, Lake of the Woods, Mahnomen, Marshall, Norman, Otter Tail, Pennington, Polk, Red Lake, Roseau, Wilkin.

DISTRICT NO. 9

F. J. Elias, M.D.....Duluth
Counties—Carlton, Cook, Itasca, Lake, St. Louis.

MINNESOTA STATE MEDICAL ASSOCIATION

COUNTY SOCIETY ROSTER

Key to Symbols: *Deceased; †Affiliate or Associate; ‡In Service.

BLUE EARTH COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of each month except June, July and August
Annual meeting in December
Number of Members: 36

President
Kemp, A. F.....Mankato

Secretary
Schmitz, A. A.....Mankato

Andrews, R. N.....Mankato
‡Butzer, J. A.....Mankato
Dahl, G. A.....Mankato
Denman, A. V.....Mankato
†Edwards, R. T....Big Fork, Montana
Franchere, F. W.....Lake Crystal
Fugina, G. R.....Mankato
‡Haes, J. E.....Vernon Center
‡Hankerson, R. G.....Minnesota Lake
Hassett, R. G.....Mankato
Hoeper, P. G. .....Mankato
Howard, M. I.....Mankato
Huffington, H. L.....Mankato
Jones, O. H.....Madison Lake
Juliar, R. O.....St. Clair
Kaufman, W. B.....Mankato
‡Kearny, R. W.....Mankato
Kemp, A. F.....Mankato
Koenigsberger, Charles .....Mankato
Liedloff, A. G.....Mankato
Luck, Hilda .....Mankato
Macbeth, J. L.....St. Clair
Mickelson, J. C.....Mankato
Miller, V. I.....Mankato
Morgan, H. O.....Amboy
Penn, G. E.....Mankato
‡Samuelson, L. G.....Mankato
Schlesselman, J. T.....Mankato
Schmidt, P. A.....Good Thunder
Schmitz, A. A.....Mankato
Sohmer, A. E.....Mankato
Stillwell, W. C.....Mankato
‡Troost, H. B.....Mankato
Vezina, J. C.....Mapleton
Wentworth, A. J.....Mankato
Williams, H. O.....Lake Crystal

BLUE EARTH VALLEY MEDICAL SOCIETY

Faribault and Martin Counties
Regular meetings, first Thursday of January, February, April, June and November
Annual meeting, first Thursday in November
Number of Members: 36

President
Cooper, M.D.....Winnebago

Secretary
Mills, J. L.....Winnebago

Bailey, H. B.....Fairmont
‡Bailey, R. B.....Fairmont
Barr, W. H.....Wells
Bergen, C. T.....Bricelyn
Blanchard, H. G.....Fairmont
Boysen, Herbert.....Madelia
Chambers, W. C.....Blue Earth
Cooper, M. D.....Winnebago
‡Demo, P. W.....Wells
Farrish, R. C.....Sherburn
Fisher, I. I.....Ceylon
Gardner, V. H.....Fairmont
Hanson, Lewis.....Frost
‡Havel, T. E.....Blue Earth
Heimark, J. J.....Fairmont
Henderson, A. J.....Minneapolis
†Holm, P. F.....Wells
Hunt, R. C.....Fairmont
‡Hunt, R. S.....Fairmont
Hunte, A. F.....Alhambra, Calif.
‡Johnson, D. W.....Fairmont
‡Krause, C. W.....Fairmont
‡MacMillan, D. G.....Triumph
McGroarty, J. J.....Easton
Mills, J. L.....Winnebago
Parsons, R. L.....Monterey
Raymond, J. H.....Canby
Rowe, W. H.....Fairmont
Russ, H. H.....Blue Earth
Sommer, A. W.....Elmore
‡Sybilrud, H. W.....Bricelyn
‡Thayer, E. A.....Truman
Vaughan, V. M.....Truman
‡Virnig, M. P.....Wells
Wilson, C. E.....Blue Earth
‡Zemke, E. E.....Fairmont

CAMP RELEASE DISTRICT MEDICAL SOCIETY

Chippewa, Lac Qui Parle and Yellow Medicine Counties
Regular meetings monthly
Annual meeting, December
Number of Members: 27

President
Hudec, E. R.....Echo

Secretary
Boody, G. J., Jr.....Dawson

Bergh, L. N.....Montevideo
Boody, G. J., Jr.....Dawson
Borgerson, M. A. .....Hanley Falls
‡Burns, F. M.....Milan
Burns, M. A.....Milan
Foshager, H. T.....Clara City
Hauge, M. I.....Clarkfield
Holmberg, L. J.....Canby
Hudec, E. R.....Echo
Johnson, C. M.....Dawson
‡Johnson, V. M.....Dawson
†Jordan, Kathleen .....Granite Falls
Jordan, L. S.....Granite Falls
Kath, R. H.....Wood Lake
Kaufman, W. C.....Appleton
Kilbride, J. S.....Canby
Lee, W. N.....Madison
Lima, Ludvig .....Montevideo
Lima, L. R., Jr.....Montevideo
‡Minge, R. K.....Clarkfield
Nelson, M. S.....Granite Falls
‡Owens, W. A.....Montevideo
Pertl, A. L.....Canby
Roust, H. A.....Montevideo
Schmidt, P. G., Jr.....Granite Falls
Smith, L. G.....Montevideo
Westby, Magnus.....Madison
Westby, Nels.....Madison

CLAY-BECKER COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, January
Number of Members: 22

President
Thysell, V. D.....Hawley

Secretary
Simison, Carl .....Barnesville

†Aborn, W. H.....Hawley
Bottolfson, B. T.....Moorhead
Carman, J. E.....Detroit Lakes
Duncan, J. W.....Moorhead
Ellingson, A. R.....Detroit Lakes
Gosslee, G. L.....Moorhead
Hagen, O. J.....Moorhead
Haight, G. G.....Audubon
‡Hendrickson, R. R.....Lake Park
Humphrey, E. W.....Moorhead
‡Ingebrigtson, E. K. G.....Moorhead
Johnson, Olga H.....Moorhead
*Larsen, O. O.....Detroit Lakes
Larson, Arnold.....Detroit Lakes
Moberg, C. W.....Detroit Lakes
Otto, H. C.....Frazee
‡Rice, H. G.....Moorhead
Rutledge, L. H.....Detroit Lakes
Seitz, S. B.....Barnesville
‡Shaw, H. A.....Lake Park
Simison, Carl.....Barnesville
Thysell, F. A.....Moorhead
Thysell, V. D.....Hawley

DAKOTA COUNTY MEDICAL SOCIETY

Number of Members: 9

President
Emond, A. J.....Farmington

Secretary
Peck, L. R.....Hastings

‡Burns, L. S.....So. St. Paul
Emond, A. J.....Farmington
‡Field, A. H.....Farmington
‡Heinz, Ivy B.....Hastings
‡Heinz, L. H.....Hastings
Peck, L. D.....Hastings
Peck, L. R.....Hastings
Sanford, J. A.....Farmington
Walter, G. F.....Richland, Wash.

EAST CENTRAL MINNESOTA MEDICAL SOCIETY

Anoka, Chisago, Isanti, Kanabec, Mille Lacs, Pine and Sherburne Counties
Regular meetings January, March, May, July, September and November
Annual meeting, November
Number of Members: 40

President
Halpin, J. E.....Rush City

Secretary
Arends, A. L.....Cambridge

Arends, A. L.....Cambridge
Blomberg, W. R.....Princeton
Bossert, C. S.....Mora
‡Brink, D. M.....Isle
‡Brown, G. E.....Pine City
Brownstone, Manuel.....Sandstone
Bunker, B. W.....Anoka
Callahan, F. F.....Ah-Gwah-Ching
Clothier, E. F.....Elk River
Cooney, H. C.....Princeton
†Dedolph, T. H.....Minneapolis
Dredge, H. P.....Sandstone
Gray, R. C.....Minneapolis
Gully, R. J.....Cambridge

Halpin, J. E. ..... Rush City
Hedenstrom, L. H. ..... Cambridge
Holmes, A. E. ..... Rush City
*Johnson, A. R. ..... Isanti
Kelsey, C. G. ..... Hinckley
McBroom, D. E. ..... Cambridge
Mork, A. H. ..... Anoka
‡Mork, F. E. ..... Anoka
Nordman, W. F. ..... Mora
Nygren, W. T. ..... Braham
O'Hanlon, J. A. ..... L'ndstrom
‡Olson, L. M. ..... Chisago City
‡Patterson, H. D. ..... Anoka
Petersen, P. C. ..... Braham
Peterson, C. A. ..... Chisago City
Poore, J. C. ..... Isle
Roehlke, A. B. ..... Elk River
Schlesselman, George ..... Anoka
Spurzem, R. J. ..... Anoka
Stephan, E. L. ..... Hinckley
‡Stratte, A. K. ..... Pine City
Swenson, R. G. ..... North Branch
Tesch, G. H. ..... Elk River
Vik, Melvin ..... Onamia
‡Whitney, R. A. ..... Cambridge

FREEBORN COUNTY MEDICAL SOCIETY

Regular meetings, Quarterly
Annual meeting, December
Number of Members: 24

President
Folken, F. G. ..... Albert Lea

Secretary
Person, J. P. ..... Alden

Barr, L. C. ..... Albert Lea
‡Branham, D. S. ..... Albert Lea
Butturff, C. R. ..... Freeborn
Calhoun, F. W. ..... Albert Lea
Donovan, D. L. ..... Albert Lea
Folken, F. G. ..... Albert Lea
Freeman, J. P. ..... Albert Lea
Freligh, W. P. ..... Albert Lea
Gamble, J. W. ..... Albert Lea
Gamble, P. M. ..... Albert Lea
Gullixson, A. ..... Albert Lea
‡Kaasa, L. J. ..... Albert Lea
Kamp, B. A. ..... Albert Lea
Leopard, B. A. ..... Albert Lea
‡Neel, H. B. ..... Albert Lea
‡Nesheim, M. O. ..... Emmons
Palmer, C. F. ..... Albert Lea
Palmer, W. L. ..... Albert Lea
‡Palmerton, E. S. ..... Albert Lea
Person, J. P. ..... Alden
‡Prins, L. R. ..... Albert Lea
Schultz, J. A. ..... Albert Lea
Swanson, R. R. ..... Albert Lea
Whitson, S. A. ..... Albert Lea

GOODHUE COUNTY MEDICAL SOCIETY

Regular meetings, none
Annual meeting, December
Number of members: 23

President
Hedin, R. F. ..... Red Wing

Secretary
Brusegard, J. F. ..... Red Wing

Aanes, A. M. ..... Red Wing
Anderson, S. H. ..... Red Wing
‡Baldigo, E. M. ..... Red Wing
Brusegard, J. F. ..... Red Wing
Claydon, H. F. ..... Red Wing
Claydon, L. E. ..... Red Wing
Flom, M. G. ..... Zumbrota
‡Graves, R. B. ..... Red Wing
‡Hartnagel, G. F. ..... Red Wing
Hedin, R. F. ..... Red Wing
Johnson, A. E. ..... Red Wing
‡Johnson, M. R. ..... Red Wing
Jones, A. W. ..... Red Wing
‡Juers, E. H. ..... Red Wing
Kimmel, G. C. ..... Red Wing
Liffrig, W. W. ..... Red Wing
‡Mack, J. J. ..... St. Louis, Mo.
McGuigan, H. T. ..... Red Wing
Sherman, R. V. ..... Red Wing
Smith, M. W. ..... Red Wing
Steffens, L. A. ..... Red Wing
Vaaler, T. ..... Cannon Falls
Williams, M. R. ..... Cannon Falls

HENNEPIN COUNTY MEDICAL SOCIETY

Regular meetings, first Monday each month, October through May
Annual meeting, October
Number of Members: 669

President
Kinsella, T. J. ..... Minneapolis

Secretary
Jones, W. R. ..... Minneapolis

Executive Secretary
Mr. J. H. Baker ..... Minneapolis

Aagaard, G. N., Jr. ..... Minneapolis
Abramson, Milton ..... Minneapolis
‡Alexander, H. A. ..... Minneapolis
‡Aling, C. A. ..... Minneapolis
Aling, C. P. ..... Minneapolis
Allen, H. W. ..... Minneapolis
Allison, R. G. ..... Minneapolis
Altnow, H. O. ..... Minneapolis
Andersen, A. G. ..... Minneapolis
Andersen, S. C. ..... Minneapolis
Anderson, D. D. ..... Minneapolis
‡Anderson, E. D. ..... Minneapolis
Anderson, E. R. ..... Minneapolis
Anderson, F. J. ..... Minneapolis
Anderson, J. K. ..... Minneapolis
Anderson, K. W. ..... Minneapolis
Anderson, P. A. ..... Minneapolis
‡Anderson, U. S. ..... Minneapolis
‡Andreasen, E. C. ..... Minneapolis
Andresen, K. D. ..... Minneapolis
Andrews, R. S. ..... Minneapolis
Arey, S. L. ..... Minneapolis
‡Arlander, C. E. ..... Minneapolis
Arling, L. S. ..... Minneapolis
‡Arling, P. A. ..... Minneapolis
Arnold, Ann W. ..... Minneapolis
Arnold, D. C. ..... Minneapolis
Arvidson, C. G. ..... Minneapolis
Aune, Martin ..... Minneapolis
Aurand, W. H. ..... Minneapolis

Baken, M. P. ..... Minneapolis
Baker, A. B. ..... Minneapolis
Baker, A. T. ..... Minneapolis
Baker, E. L. ..... Minneapolis
Baker, Looe ..... Minneapolis
‡Balkin, S. G. ..... Minneapolis
†Barber, J. P. ..... Minneapolis
‡Barr, R. N. ..... St. Paul
Barron, Moses ..... Minneapolis
Bass, G. W. ..... Minneapolis
Baxter, S. H. ..... Minneapolis
Bayard, H. F. ..... Minneapolis
Beach, Northrop ..... Minneapolis
†Beard, A. H. ..... Minneapolis
Becker, Arnetta M. ..... Minneapolis
‡Beckman, W. G. ..... Minneapolis
Bedford, E. W. ..... Minneapolis
†Bell, E. T. ..... Minneapolis
‡Belzer, M. S. ..... Minneapolis
Benesh, L. A. ..... Minneapolis
Benesh, N. G. ..... Minneapolis
Benjamin, A. F. ..... Minneapolis
‡Benjamin, E. G. ..... Minneapolis
‡Benjamin, H. G. ..... Minneapolis
Benn, F. G. ..... Minneapolis
Berger, A. G. ..... Minneapolis
‡Bergh, G. S. ..... Minneapolis
‡Berkwitz, N. J. ..... Minneapolis
‡Berman, Reuben ..... Minneapolis
‡Bessesen, A. N., Jr. ..... Minneapolis
‡Bessesen, D. H. ..... Minneapolis
Bessesen, W. A. ..... Minneapolis
Blake, James ..... Hopkins
‡Blake, J. A. ..... Hopkins
Blumenthal, J. S. ..... Minneapolis
‡Blumstein, Alex ..... Minneapolis
Bockman, M. W. H. ..... Minneapolis
Boehrer, J. J. ..... Minneapolis
Boies, L. R. ..... Minneapolis
Booth, A. E. ..... Minneapolis
Boreen, C. A. ..... Minneapolis
Borgeson, E. J. ..... Minneapolis
Borman, C. N. ..... Minneapolis
Borowicz, L. A. ..... Minneapolis
†Bouman, H. A. H. ..... Minneapolis
Boynton, Ruth E. ..... Minneapolis
Bratrud, A. F. ..... Minneapolis
‡Brekke, H. J. ..... Minneapolis
Brooks, C. N. ..... Minneapolis
†Brown, E. D. ..... Paynesville
‡Brown, S. P. ..... Minneapolis
Brown, W. D. ..... Minneapolis
‡Brutsch, G. C. ..... Minneapolis
‡Bryant, F. L. ..... Minneapolis
‡Buchstein, H. F. ..... Minneapolis
Bulkley, Kenneth ..... Minneapolis
‡Burlingame, D. A. ..... Minneapolis
*Butler, John ..... Minneapolis
Buzzelle, L. K. ..... Minneapolis

Cable, M. L. ..... Minneapolis
Cabot, C. M. ..... Minneapolis
Cabot, V. S. ..... Minneapolis
Cady, L. H. ..... Minneapolis
Callerstrom, G. W. ..... Minneapolis
Cameron, Isabell L. ..... Minneapolis
Camp, W. E. ..... Minneapolis
Campbell, L. M. ..... Minneapolis
Campbell, O. J. ..... Minneapolis
Cardle, A. E. ..... Minneapolis
Carey, J. B. ..... Minneapolis
Carlson, Lawrence ..... Minneapolis
Carlson, L. T. ..... Minneapolis
Caron, R. P. ..... Minneapolis
‡Caspers, C. G. ..... Minneapolis
‡Cavanor, F. T. ..... Minneapolis
‡Challman, S. A. ..... Minneapolis
Chesley, A. J. ..... Minneapolis
Christenson, G. R. ..... Minneapolis
Christianson, H. W. ..... Minneapolis
†Clark, H. S. ..... Minneapolis
‡Clay, L. B. ..... Minneapolis
‡Cochrane, R. F. ..... Minneapolis
Cohen, B. A. ..... Minneapolis
Cohen, S. S. ..... Oak Terrace
‡Colp, E. A. ..... Robbinsdale
Condit, W. H. ..... Minneapolis
Corbett, J. F. ..... Minneapolis
Corniea, A. D. ..... Minneapolis
Cowan, D. W. ..... Minneapolis
Cranmer, R. R. ..... Minneapolis
‡Cranston, R. W. ..... Minneapolis
Creevy, C. D. ..... Minneapolis
‡Creighton, R. H. ..... Minneapolis
Cumming, H. A. ..... Minneapolis
Curtin, J. F. ..... Minneapolis
Cutts, George ..... Minneapolis

Dady, E. E. ..... Minneapolis
Dahl, E. O. ..... Minneapolis
Dahl, J. A. ..... Minneapolis
Daniel, D. H. ..... Minneapolis
*Daniel, L. M. ..... Minneapolis
Davis, J. C. ..... Minneapolis
del Plaine, C. W. ..... Minneapolis
Dennis, Clarence ..... Minneapolis
Devereaux, T. J. ..... Wayzata
Diehl, H. S. ..... Minneapolis
Diessner, H. D. ..... Minneapolis
Dorge, R. I. ..... Minneapolis
Dornblaser, H. B. ..... Minneapolis
Dorsey, G. C. ..... Minneapolis
‡Dowidat, R. W. ..... Minneapolis
‡Downing, A. H. ..... Minneapolis
Doxey, G. L. ..... Minneapolis
Doyle, L. O. ..... Minneapolis
Drake, C. R. ..... Minneapolis
Drill, H. E. ..... Hopkins
‡Duff, E. R. ..... Minneapolis
Dukelow, D. A. ..... Minneapolis
Dumas, A. G. ..... Minneapolis
Dunlap, E. H. ..... Minneapolis
Dunn, G. R. ..... Minneapolis
Duryea, W. M. ..... Minneapolis
†Dutton, C. E. ..... Minneapolis
Dvorak, B. A. ..... Minneapolis
Dwan, P. F. ..... Minneapolis
‡Dworsky, S. D. ..... Minneapolis

Ehrenberg, C. J.....Minneapolis
‡Ehrlich, S. P.....Minneapolis
Eich, Matthew.....Minneapolis
Eistenstadt, D. H.....Minneapolis
‡Eistenstadt, W. S.....Minneapolis
Eitel, G. D.....Minneapolis
Ellison, D. E.....Minneapolis
Engelhart, P. C.....Minneapolis
Engstrand, O. J.....Minneapolis
‡Erickson, R. F.....Minneapolis
‡Ericson, R. M.....Minneapolis
‡Evans, E. T.....Minneapolis

Fansler, W. A.....Minneapolis
‡Farsht, I. J.....Minneapolis
Feeney, J. M.....Minneapolis
Fenger, E. P. K.....Oak Terrace
‡Fetterly, Warren.....Minneapolis
‡Fink, D. L.....Minneapolis
Fink, L. W.....Minneapolis
Fink, W. H.....Minneapolis
†Fitzgerald, D. F.....Minneapolis
Fjelstad, C. A.....Minneapolis
Fleming, A. S.....Minneapolis
Foker, L. W.....Minneapolis
Ford, W. H.....Minneapolis
Foster, W. K.....Minneapolis
‡Fowler, L. H.....Minneapolis
‡Frane, D. B.....Minneapolis
Fredericks, G. M.....Minneapolis
Fredlund, M. L.....Minneapolis
Fried, L. A.....Minneapolis
‡Fritzell, K. E.....Minneapolis
Frost, J. B.....Minneapolis
Fuller, Alice H.....Minneapolis
‡Funk, V. K.....Oak Terrace

‡Galloway, J. B.....Minneapolis
Gammell, J. H.....Minneapolis
Gardner, E. L.....Minneapolis
Garten, J. L.....Minneapolis
Giere, J. C.....Minneapolis
‡Giere, R. W.....Minneapolis
†Giessler, P. W.....Minneapolis
Gilbert, M. G.....Minneapolis
Gilles, F. L.....Minneapolis
Gingold, B. A.....Minneapolis
Girvin, R. B.....Minneapolis
Golberg, M. L.....Minneapolis
‡Goldberg, I. M.....Minneapolis
Goldman, T. I.....Minneapolis
‡Goldner, M. Z.....Minneapolis
Good, H. D.....Minneapolis
‡Gordon, P. E.....Minneapolis
Grave, Floyd.....Minneapolis
**Greathouse, J. D.....Minneapolis
Green, R. G.....Minneapolis
Grimes, Marian.....Minneapolis
‡Gronvall, P. R.....Minneapolis
Gunderson, N. A.....Minneapolis
Gushurst, E. G.....Minneapolis
‡Gustason, H. T.....Minneapolis

†Hacking, F. H.....Minneapolis
‡Hagen, W. S.....Minneapolis
†Haggard, G. D.....Minneapolis
Hall, H. B.....Minneapolis
Hall, J. M.....Minneapolis
Hallberg, C. A.....Minneapolis
‡Hallock, Philip.....Minneapolis
Hamel, A. L.....Minneapolis
Hamlin, G. B.....Minneapolis
‡Hammerstad, L. M.....Minneapolis
Hammond, A. J.....Minneapolis
Hannah, H. B.....Minneapolis
Hansen, C. O.....Minneapolis
Hansen, E. W.....Minneapolis
Hansen, Olga S.....Minneapolis
Hanson, H. J.....Minneapolis
Hanson, H. V.....Minneapolis
Hanson, M. B.....Minneapolis
Hanson, W. A.....Minneapolis
Happe, L. J.....Minneapolis
Harrington, C. D.....Wayzata
Harrington, F. E.....Minneapolis
‡Hart, V. L.....Minneapolis
Hartig, Hermina .....Minneapolis
†Hartzell, T. B.....Minneapolis
Hastings, D. R.....Minneapolis
‡Hauge, E. T.....Minneapolis
‡Haugen, J. A.....Minneapolis
Haven, W. K.....Minneapolis
‡Hawkinson, R. P.....Minneapolis
‡Hays, A. T.....Minneapolis
‡Head, D. P.....Minneapolis
Head, G. D.....Minneapolis
Hedback, A. E.....Minneapolis
Heim, R. R.....Minneapolis
Hendrickson, J. F.....Minneapolis
Henrikson, E. C.....Minneapolis
†Henry, C. E.....Kirksville, Mo.
Henry, M. O.....Minneapolis
‡Herbert, W. L.....Minneapolis
Hertzog, A. J.....Minneapolis

**Died in Service.

Higgins, J. H.....Minneapolis
†Hill, Eleanor J.....Minneapolis
Hillis, S. J.....Minneapolis
Hinckley, R. G.....Minneapolis
Hirshfield, F. R.....Minneapolis
†Hoaglund, A. W.....Minneapolis
†Hobbs, C. A.....Minneapolis
Hodge, S. V.....Minneapolis
Hoffbauer, F. W.....Minneapolis
Hoffert, H. E.....Minneapolis
Hoffman, R. A.....Minneapolis
Hoffman, W. L.....Minneapolis
†Holl, P. M.....Minneapolis
‡Holmberg, C. J.....Minneapolis
‡Holt, W. B.....Minneapolis
‡Holzapfel, F. C.....Minneapolis
Houkom, Bjarne .....Minneapolis
Hovland, M. L.....Minneapolis
Hudson, G. E.....Minneapolis
Huenekens, E. J.....Minneapolis
Hultkrans, J. C.....Minneapolis
‡Hultkrans, R. E.....Minneapolis
Hurd, Annah.....Minneapolis
‡Hutchinson, C. J.....Minneapolis
Hutchinson, Dorothy W...Oak Terrace
Hymes, Charles.....Minneapolis
Hynes, J. E.....Minneapolis

Irvine, H. G.....Minneapolis

†Jackson, C. M.....Minneapolis
‡Jaeck, J. L.....Minneapolis
Jensen, Harry.....Minneapolis
Jensen, M. J.....Minneapolis
Jensen, R. A.....Minneapolis
Johnson, A. B.....Minneapolis
Johnson, A. E.....Minneapolis
Johnson, Evelyn V.....St. Louis Park
‡Johnson, E. W.....Minneapolis
‡Johnson, H. A.....Minneapolis
Johnson, J. A.....Minneapolis
Johnson, Julius.....Minneapolis
†Johnson, N. A...Santa Monica, Calif.
Johnson, Norman.....Minneapolis
Johnson, N. T.....Minneapolis
Johnson, R. A.....Minneapolis
‡Johnson, R. E.....Minneapolis
‡Johnson, Y. T.....Minneapolis
‡Jones, H. W., Jr.....Minneapolis
Jones, W. R.....Minneapolis
Josewich, Alexander.....Minneapolis
Judd, W. H.....Minneapolis
Jurdy, M. J.....Minneapolis

‡Kabler, P. W.....Minneapolis
Kalin, O. T.....Minneapolis
Karlstrom, A. E.....Minneapolis
Kelby, G. M.....Minneapolis
Kennedy, C. C.....Minneapolis
Kennedy, Jane F.....Minneapolis
Kerkhof, A. C.....Minneapolis
Kertesz, G.....Minneapolis
†King, E. A.....Minneapolis
King, Frances W.....Oak Terrace
*King, H. T.....Minneapolis
Kinsella, T. J.....Minneapolis
Kistler, A. J.....Minneapolis
†Kistler, C. M.....Minneapolis
Knapp, M. E.....Minneapolis
Knight, R. R.....Minneapolis
Knight, R. T.....Minneapolis
‡Koepcke, G. M.....Minneapolis
Koller, H. M.....Minneapolis
Koller, L. R.....Minneapolis
Korchik, J. P.....Minneapolis
Koucky, R. W.....Minneapolis
Kucera, F. J.....Hopkins
Kucera, W. J.....Minneapolis

Lajoie, J. M.....Minneapolis
Lang, L. A.....Minneapolis
Lapierre, A. P.....Minneapolis
Lapierre, J. T.....Minneapolis
‡Larsen, F. W.....Minneapolis
Larson, C. M.....Minneapolis
‡Larson, Lawrence M.....Minneapolis
Larson, Leonard M.....Oak Terrace
Larson, P. N.....Minneapolis
La Vake, R. T.....Minneapolis
Laymon, C. W.....Minneapolis
Lazar, H. L.....Minneapolis
†Leavitt, H. H.....Minneapolis
Lebowske, J. A.....Minneapolis
Lee, H. M.....Minneapolis
Leland, H. R.....Minneapolis
‡Leland, J. A. C.....Minneapolis
Lenz, O. A.....Minneapolis
Leonard, L. J.....Minneapolis
Leonard, Sam.....Minneapolis
Lillehei, E. J.....Robbinsdale
Lind, C. J.....Minneapolis
Lindberg, A. C.....Minneapolis
‡Lindberg, V. L.....Minneapolis
‡Lindgren, R. C.....Minneapolis
Linner, H. P.....Minneapolis

‡Lipschultz, Oscar.....Minneapolis
Litchfield, J. T.....Minneapolis
‡Litman, A. B.....Minneapolis
Litzenberg, J. C.....Minneapolis
Logefeil, R. C.....Minneapolis
†Long, Jesse.....Minneapolis
Loomis, E. A.....Minneapolis
Lovett, Beatrice R.....Oak Terrace
Lowry, Elizabeth C.....Minneapolis
Lowry, Thomas.....Minneapolis
‡Lufkin, N. H.....Minneapolis
Lundberg, Ruth I.....Minneapolis
‡Lundblad, R. A.....Minneapolis
‡Lundblad, S. W.....Minneapolis
Lundgren, A. C.....Minneapolis
Lundgren, Olive A.....St. Paul
Lundquist, E. F.....Minneapolis
Lynch, M. J.....Minneapolis
Lysne, Henry.....Minneapolis
‡Lysne, Myron.....Minneapolis

MacDonald, A. E.....Minneapolis
MacDonald, D. A.....Minneapolis
Mach, F. B.....Minneapolis
‡MacKinnon, D. C.....Minneapolis
Macnie, J. S.....Minneapolis
Maeder, E. C.....Minneapolis
Maland, C. O.....Minneapolis
Mariette, E. S.....Oak Terrace
Mark, D. B.....Minneapolis
Marking, G. H.....Minneapolis
Martinson, C. J.....Wayzata
†Matchan, G. R.....Minneapolis
Mattill, P. M.....Oak Terrace
‡Mattison, R. E.....Minneapolis
‡Mattson, Hamlin.....Minneapolis
Maxeiner, S. R.....Minneapolis
May, W. H.....Minneapolis
‡McCarthy, Donald.....Minneapolis
McCartney, J. S.....Minneapolis
‡McCrimmon, H. P.....Minneapolis
McDaniel, Orianna.....Minneapolis
McFarland, A. H.....Minneapolis
McGandy, R. F.....Minneapolis
McGeary, G. E.....Minneapolis
McInerny, M. W.....Minneapolis
McKelvey, J. L.....Minneapolis
‡McKenzie, C. H.....Minneapolis
McKinlay, C. A.....Minneapolis
McKinley, J. C.....Minneapolis
McKinney, F. S.....Minneapolis
McLennan, C. E.....Minneapolis
McPheeters, H. O.....Minneapolis
†McQuarrie, Irvine.....Minneapolis
Meland, E. L.....Minneapolis
Meller, R. L.....Minneapolis
Merkert, C. E.....Minneapolis
Merkert, G. L.....Minneapolis
†Merrill, Elizabeth.....Minneapolis
Meyer, A. J.....Minneapolis
Meyer, E. L.....Minneapolis
Michael, J. C.....Minneapolis
‡Michel, H. H.....Minneapolis
Michelson, H. E.....Minneapolis
‡Miller, Harold E.....Minneapolis
‡Miller, Hugo E.....Minneapolis
Miller, J. C.....Minneapolis
Milton, J. S.....Minneapolis
‡Minsky, A. A.....Minneapolis
Mitchell, E. C.....Mound
Moe, J. H.....Minneapolis
Moen, J. K.....Minneapolis
Monahan, Elizabeth S.....Minneapolis
‡Monson, E. M.....Minneapolis
Moren, Edward.....Minneapolis
Moriarty, Cecile R.....St. Paul
Morrison, A. W.....Minneapolis
Morrison, Charlotte J.....Minneapolis
Morse, R. W.....Minneapolis
‡Murphy, E. P.....Minneapolis
Murphy, I. J.....Minneapolis
‡Musty, N. J.....Minneapolis
Myers, J. A.....Minneapolis

‡Naslund, A. W.....Minneapolis
‡Neal, J. M.....Minneapolis
Neary, R. P.....Minneapolis
†Nelson, H. S.....Excelsior
Nelson, E. N.....Minneapolis
Nelson, Harvey.....Minneapolis
‡Nelson, L. M.....Minneapolis
‡Nelson, M. C.....Minneapolis
‡Nelson, O. L. N.....Minneapolis
‡Nelson, W. I.....Minneapolis
Newhart, Horace.....Minneapolis
‡Noonan, W. J.....Minneapolis
Nordin, G. T.....Minneapolis
Nordland, Martin.....Minneapolis
Noth, H. W.....Minneapolis
Nydahl, M. J.....St. Paul
Nylander, E. G.....Minneapolis
Nystrom, Ruth G.....Minneapolis

Oberg, C. M.....Minneapolis
†O'Brien, W. A.....Minneapolis
O'Donnell, J. E.....Minneapolis

‡Olsen, E. G. ..... Minneapolis
Olson, A. C. ..... Minneapolis
Olson, F. A. ..... Los Angeles, Calif.
Olson, O. A. ..... Minneapolis
†Olson, R. G. ..... Minneapolis
Oppen, E. G. ..... Minneapolis
†Owre, Oscar ..... Minneapolis

‡Paine, J. R. ..... Minneapolis
‡Palen, B. J. ..... Minneapolis
Patterson, W. E. ..... Minneapolis
†Pederson, R. M. ..... Minneapolis
Peppard, T. A. ..... Minneapolis
‡Perlman, E. C. ..... Minneapolis
Petersen, J. R. ..... Minneapolis
‡Petersen, R. T. ..... Minneapolis
†Petersen, Thorvald ..... Minneapolis
Peterson, Henry ..... Minneapolis
‡Peterson, H. W. ..... Minneapolis
Peterson, N. P. ..... Minneapolis
Peterson, O. H. ..... Minneapolis
Peterson, P. E. ..... Minneapolis
Peterson, W. C. ..... Minneapolis
Petit, L. J. ..... Minneapolis
‡Pewters, J. T. ..... Minneapolis
Peyton, W. T. ..... Minneapolis
Pfunder, M. C. ..... Minneapolis
Phelps, K. A. ..... Minneapolis
Platou, E. S. ..... Minneapolis
Pohl, J. F. ..... Minneapolis
‡Pollard, D. W. ..... Minneapolis
Pollock, D. K. ..... Minneapolis
Polzak, J. A. ..... Minneapolis
Poppe, F. H. ..... Minneapolis
Potter, R. B. ..... Minneapolis
Potthoff, C. J. ..... Minneapolis
Pratt, F. J. ..... Minneapolis
Preine, I. A. ..... Minneapolis
Preston, P. J. ..... Minneapolis
‡Priest, R. E. ..... Minneapolis
Prim, J. A. ..... Minneapolis
Proffitt, W. E. ..... Minneapolis
Proshek, C. E. ..... Minneapolis

‡Quello, R. O. B. ..... Minneapolis
†Quinby, T. F. ..... Minneapolis
Quist, H. W. ..... Minneapolis

Reed, C. A. ..... Minneapolis
Regnier, E. A. ..... Minneapolis
‡Rewbridge, A. G. ..... Minneapolis
Reynolds, J. S. ..... Minneapolis
Rice, C. O. ..... Minneapolis
‡Richardson, F. S. ..... Minneapolis
Richdorf, L. F. ..... Minneapolis
Rieke, W. W. ..... Wayzata
Rigler, L. G. ..... Minneapolis
‡Rizer, D. K. ..... Minneapolis
Rizer, R. I. ..... Minneapolis
Roan, C. M. ..... Minneapolis
Robb, E. F. ..... Minneapolis
Robbins, O. F. ..... Minneapolis
‡Roberts, L. J. ..... Minneapolis
‡Roberts, S. W. ..... Minneapolis
Roberts, W. B. ..... Minneapolis
Robitshek, E. C. ..... Minneapolis
Rochford, W. E. ..... Minneapolis
Rodda, F. C. ..... Minneapolis
Rosenwald, R. M. ..... Minneapolis
Roskilly, G. C. P. ..... Minneapolis
‡Ross, A. J. ..... Minneapolis
Rucker, W. H. ..... Minneapolis
Rud, N. E. ..... Minneapolis
Rudell, G. L. ..... Minneapolis
‡Russeth, A. N. ..... Minneapolis
Rusten, E. M. ..... Minneapolis

‡Sadler, W. P. ..... Minneapolis
‡St. Cyr, K. J. ..... Osseo
‡Saliterman, B. I. ..... Minneapolis
Salt, C. G. ..... Minneapolis
Samuelson, Samuel ..... Minneapolis
Sandell, S. T. ..... Oak Terrace
‡Sandt, K. E. ..... Minneapolis
Sawatzky, W. A. ..... Minneapolis
Schaaf, F. H. K. ..... Minneapolis
Schaefer, W. G. ..... Minneapolis
†Scheldrup, W. H. ..... Minneapolis
Scherer, L. R. ..... Minneapolis
Schiele, B. C. ..... Minneapolis
‡Schmidt, G. F. ..... Minneapolis
†Schmitt, S. C. ..... Los Angeles, Calif.
†Schneider, J. P. ..... Minneapolis
Schneideman, N. R. ..... Minneapolis
Schottler, M. E. ..... Minneapolis
‡Schultz, P. J. ..... Minneapolis
†Schussler, O. F. ..... Minneapolis
Schwartz, V. J. ..... Minneapolis
†Schwyzer, Gustav ..... Minneapolis
†Scott, F. H. ..... Minneapolis
Scott, H. G. ..... Minneapolis
†Seashore, Gilbert ..... Minneapolis
Seham, Max ..... Minneapolis
Seifert, M. H. ..... Excelsior
‡Seljeskog, S. R. ..... Minneapolis
Sessions, J. C. ..... Minneapolis
Shandorf, J. F. ..... Minneapolis
Shaperman, Eva P. ..... Minneapolis
Shapiro, M. J. ..... Minneapolis
Sharp, D. V. ..... Minneapolis
Siegmann, W. C. ..... Minneapolis
Silver, J. D. ..... Minneapolis
Simons, J. H. ..... Minneapolis
‡Simonson, D. B. ..... Minneapolis
Simpson, E. D. ..... Minneapolis
‡Sinykin, M. B. ..... Minneapolis
Siperstein, D. M. ..... Minneapolis
†Sivertsen, Andrew ..... Minneapolis
Sivertsen, Ivar ..... Minneapolis
Skjold, A. C. ..... Minneapolis
‡Sloan, Julius ..... Minneapolis
‡Smisek, F. M. ..... Minneapolis
Smith, A. E. ..... Minneapolis
Smith, Adam M. ..... Minneapolis
Smith, Archie M. ..... Minneapolis
Smith, H. R. ..... Minneapolis
Smith, Margaret I. ..... Minneapolis
Smith, N. M. ..... Minneapolis
Soderlind, R. T. ..... Minneapolis
Solhaug, S. B. ..... Minneapolis
‡Spano, J. P. ..... Minneapolis
‡Sperling, Louis ..... Minneapolis
Spink, W. W. ..... Minneapolis
Spratt, C. N. ..... Minneapolis
Stanford, C. E. ..... Minneapolis
‡Stebbins, T. L. ..... Minneapolis
Stein, K. E. ..... Lakeville
Stelter, L. A. ..... Minneapolis
Stenstrom, Annette T. ..... Minneapolis
Stewart, R. I. ..... Minneapolis
†Stomel, Joseph ..... Los Angeles, Calif.
†Strachauer, A. C. ..... Minneapolis
‡Stromgren, D. T. ..... Minneapolis
Strout, G. E. ..... Minneapolis
Strunk, C. A. ..... Minneapolis
Sturre, J. R. ..... Minneapolis
Stuurmans, S. H. ..... Minneapolis
Sullivan, R. M. ..... Minneapolis
‡Sullivan, R. R. ..... Minneapolis
Sundt, Mathias ..... Minneapolis
*Swanson, Cephas ..... Minneapolis
Swanson, R. E. ..... Minneapolis

‡Sweetser, H. B., Jr. ..... Minneapolis
†Sweetser, H. B., Sr. ..... Minneapolis
Sweetser, T. H. ..... Minneapolis
Sweitzer, S. E. ..... Minneapolis
†Swendseen, C. G. ..... Minneapolis

Tangen, G. M. ..... Minneapolis
Taylor, J. H. ..... Minneapolis
Thomas, G. E. ..... Minneapolis
Thomas, G. H. ..... Minneapolis
Thompson, W. H. ..... Minneapolis
‡Thysell, D. M. ..... Minneapolis
Tingdale, A. C. ..... Minneapolis
Todd, Ramona L. ..... Minneapolis
‡Trow, J. E. ..... Minneapolis
Trueman, H. S. ..... Minneapolis
Tunstead, H. J. ..... Minneapolis
Turnacliff, D. D. ..... Minneapolis

Ude, W. H. ..... Minneapolis
Ulrich, H. L. ..... Minneapolis
Undine, C. A. ..... Minneapolis

Vik, A. E. ..... Minneapolis

Wahlquist, H. F. ..... Minneapolis
Walch, A. E. ..... Minneapolis
Waldron, C. W. ..... Minneapolis
Wall, C. R. ..... Minneapolis
‡Walsh, W. T. ..... Minneapolis
Wangensteen, O. H. ..... Minneapolis
†Wanous, E. Z. ..... Minneapolis
*Ward, A. W. ..... Minneapolis
Ward, P. A. ..... Minneapolis
Watson, C. J. ..... Minneapolis
Weaver, M. M. ..... Minneapolis
Webb, R. C. ..... Minneapolis
‡Weisman, S. A. ..... Minneapolis
West, Catherine C. ..... Minneapolis
Wethall, A. G. ..... Minneapolis
Wetherby, Macnider ..... Minneapolis
Weum, T. W. ..... Minneapolis
‡White, A. A. ..... Minneapolis
White, S. M. ..... Minneapolis
White, W. D. ..... Minneapolis
Whitesell, L. A. ..... Minneapolis
‡Widen, W. F. ..... Minneapolis
Wilcox, A. E. ..... Minneapolis
†Willcutt, C. E. ..... Minneapolis

‡Wildebush, F. F. ..... Minneapolis
Wilder, K. W. ..... Minneapolis
‡Wilder, R. L. ..... Minneapolis
Wilken, P. A. ..... Minneapolis
Williams, Robert ..... Minneapolis
Winer, L. H. ..... Minneapolis
Winther, Nora M. C. ..... Minneapolis
‡Wipperman, F. F. ..... Minneapolis
Witham, C. A. ..... Minneapolis
Wittich, F. W. ..... Minneapolis
Wolf, W. W. ..... Minneapolis
Wohlrabe, A. A. ..... Minneapolis
*Woodworth, Elizabeth ..... Minneapolis
†Wright, C. D. ..... Minneapolis
Wright, S. G. ..... Minneapolis
Wright, W. S. ..... Minneapolis
Wyatt, O. S. ..... Minneapolis
Wynne, H. M. N. ..... Minneapolis

Ylvisaker, R. S. ..... Minneapolis
Yoerg, O. W. ..... Minneapolis

*Zaworski, E. A. ..... Minneapolis
Zierold, A. A. ..... Minneapolis
Zinter, F. A. ..... Minneapolis
‡Ziskin, Thomas ..... Minneapolis

KANDIYOHI-SWIFT-MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday of month
Annual meeting, January
Number of Members: 35

President
Anderson, R. E. ..... Willmar

Secretary
Jacobs, J. C. ..... Willmar

Anderson, R. E. ..... Willmar
Arnson, J. M. ..... Benson
‡Beckjord, P. R. ..... Willmar
Branton, A. F. ..... Willmar
Branton, B. J. ..... Willmar
Brigham, Frank ..... Watkins
Daignault, Oscar ..... Benson
Danielson, K. A. ..... Litchfield
Danielson, Lennox ..... Litchfield
Dowswell, W. J. ..... Kerkhoven
Feinstein, J. Y. ..... Grove City
Frederickson, Alice C. ..... Willmar
Frederickson, G. U. Y. ..... Willmar
Frisch, F. P. ..... Willmar
Frost, E. H. ..... Willmar
Giere, S. W. ..... Benson
‡Gilman, L. C. ..... Atwater
Hodapp, R. J. ..... Willmar
‡Jacobs, D. L. ..... Willmar
Jacobs, J. C. ..... Willmar
Johnson, Hans ..... Kerkhoven
‡Johnson, J. W. ..... Kerkhoven
Kaufman, E. J. ..... Appleton
‡Macklin, W. E. ..... Litchfield
‡Marsh, O. M. ..... Litchfield
O'Connor, D. C. ..... Eden Valley
Petersen, M. C. ..... Rochester
‡Proeschel, R. K. ..... Willmar
Ripple, R. J. ..... New London
Scofield, C. L. ..... Benson
‡Sellers, G. K. ..... Dassel
Solsem, F. N. ..... Spicer
Telford, V. J. ..... Litchfield
‡Wilmot, C. A. ..... Litchfield
Wilmot, H. E. ..... Litchfield

LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, first Tuesday of month
Annual meeting, Last Tuesday in October
Number of Members: 25

President
Kruezer, T. C. ..... Marshall

Secretary
Workman, W. G. ..... Tracy

‡Erickson, A. O. ..... Ivanhoe
Ford, B. C. ..... Marshall
‡Frank, J. E. ..... Marshall
Friedell, George ..... Ivanhoe
Germo, Charles ..... Balaton
Gray, F. D. ..... Marshall
‡Gray, R. F. ..... Marshall
‡Helferty, J. K. ..... Tracy
Hermanson, P. E. ..... Hendricks
Hoidale, A. D. ..... Tracy

Johnson, P. C.....Tyler
‡Karleen, C. I.....Tracy
Kruezer, T. C.....Marshall
‡Monson, L. J.....Canby
‡Murphy, J. E.....Marshall

Purves, G. H.....Lake Benton
†Robertson, J. B.....Minneapolis
Sanderson, E. T.....Minneota
‡Smith, L. A.....Balaton
‡Thompson, C. O.....Hendricks

Vadheim, A. L.....Tyler
Valentine, W. H.....Tracy
‡Wolstan, S. D.....Minneota
Workman, W. G.....Tracy
Yaeger, W. W.....Marshall

McLEOD COUNTY MEDICAL SOCIETY

Regular meetings, at call of President
Annual meeting, January
Number of Members: 17

President
Selmo, J. D.....Norwood
Secretary
Sheppard, C. G.....Hutchinson
Clement, J. B.....Lester Prairie
‡Goss, H. C.....Glencoe
Goss, Martha D.....Glencoe

Holm, H. H.....Glencoe
Jensen, A. M.....Brownton
‡Kallestad, L. L.....Hutchinson
Klima, W. W.....Stewart
Lippmann, E. W.....Hutchinson
McMahon, M. J.....Green Isle
Neumaier, Arthur.....Glencoe
Rempel, D. D.....Lester Prairie

Sahr, W. G.....Hutchinson
Scholpp, O. W.....Hutchinson
Selmo, J. D.....Norwood
Sheppard, C. G.....Hutchinson
*Sheppard, Fred .....Burien, Wash.
†Sheppard, P. E.....Hutchinson
*Tinker, C. W.....Stewart
Trutna, T. J.....Silver Lake

MOWER COUNTY MEDICAL SOCIETY

Regular meetings, last Thursday of each month
Annual meeting, November
Number of Members: 23

President
Hegge, R. S.....Austin
Secretary
Rohertson, P. A.....Austin
Allen, C. C.....Austin
Allen, H. B.....Austin
‡Anderson, D. P., Jr.....Austin
‡Eckdale, J. E.....Lyle
‡Eckhardt, C. L.....Austin

Fisch, H. M.....Austin
Grise, W. B.....Austin
Havens, J. G. W.....Austin
Hegge, O. H.....Austin
Hegge, R. S.....Austin
Henslin, A. E.....Le Roy
Hertel, G. E.....Austin
‡Leck, P. C.....Austin
Lommen, P. A.....Austin
McKenna, J. K.....Austin

Melzer, G. R.....Lyle
Mitchell, R. S.....Grand Meadow
Morrow, J. J.....Austin
Morse, M. P.....Le Roy
Robertson, P. A.....Austin
‡Rosenthal, F. H.....Grand Meadow
Schneider, P. J.....Adams
Schottler, G. J.....Dexter
Sheedy, C. L.....Austin

NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Annual meeting, December
Number of Members: 23

President
Nilson, H. J.....North Mankato
Secretary
Johnson, H. C.....North Mankato
Aitkens, H. B.....Le Center
Bloedel, T. J.....Glencoe
Covell, W. W.....St. Peter
Curtis, R. A.....Le Center
Ericson, Swan.....Le Sueur

Freeman, G. H.....St. Peter
‡Grimes, B. P.....St. Peter
Hiniker, P. J.....Le Sueur
Holtan, Theodore.....Waterville
Johnson, H. C.....North Mankato
‡Larson, M. H.....Nicollet
‡Lenander, M. E.....St. Peter
Miller, E. W.....Anoka
Nilson, H. J.....North Mankato
Nissen, A. S.....St. Peter

Olmanson, E. G.....St. Peter
Olson, D. C.....Gaylord
‡Rossen, R. X.....Hastings
‡Sonnesyn, N. N.....Le Sueur
Strathern, C. S.....St. Peter
Strathern, F. P.....St. Peter
Traxler, F. J.....Henderson
Wohlrabe, C. F.....North Mankato
Wolner, O. H.....St. Peter

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY MEDICAL SOCIETY

Regular meetings, first Wednesday every odd month
Annual meeting, November
Number of Members: 583

President
Buie, L. A.....Rochester
Secretary
Anderson, M. J.....Rochester
Adams, R. C.....Rochester
Adson, A. W.....Rochester
Affeldt, D. E.....Kasson
Ahlfs, Jacob.....Caledonia
Aita, J. A.....Dubuque, Iowa
Albers, G. D.....Rochester
‡Allen, E. V.....Rochester
Alvarez, W. C.....Rochester
Amherg, Samuel.....Rochester
‡Amhrusko, J. S.....Rochester
‡Anderson, C. D.....Rochester
‡Anderson, E. M.....Rochester
Anderson, H. A.....Rochester
Anderson, L. E.....Rochester
Anderson, M. J.....Rochester
‡Anderson, N. E.....Harmony
‡Arny, F. P.....Preston
‡Ashburn, F. S.....Rochester
Atwater, J. S.....Rochester
‡Babb, F. S.....Rochester
Baggenstoss, A. H.....Rochester
Bair, H. L.....Rochester
‡Baker, G. S.....Rochester
Baker, H. R.....Hayfield
Baker, R. L.....Hayfield
Balfour, D. C.....Rochester
Banner, E. A.....Rochester
Bargen, J. A.....Rochester
Barker, N. W.....Rochester
Barnes, A. R.....Rochester
‡Beard, Crowell .....Rochester
‡Beizer, L. H.....Rochester
Belote, G. B.....Caledonia
Benedict, W. L.....Rochester
Bennett, J. G.....Rochester
‡Bennett, J. K.....Rochester
Bennett, W. A.....Rochester

Benson, A. J.....Rochester
Benson, R. E.....Rochester
Berkman, D. M.....Rochester
Berkman, J. M.....Rochester
Bianco, J. J.....Rochester
Bickel, W. H.....Rochester
Bigelow, C. E.....Dodge Center
Binger, M. W.....Rochester
Black, A. S., Jr.....Rochester
Black, B. M.....Rochester
Black, W. A.....Rochester
Blaisdell, J. S.....Rochester
Blumenthal, L. S.....Rochester
Boothby, W. M.....Rochester
Bowing, H. H.....Rochester
Braasch, W. F.....Rochester
Bradshaw, S. P.....Rochester
‡Breslow, Lester.....Rochester
Brindley, G. V., Jr.....Rochester
Broders, A. C.....Rochester
Brown, A. E.....Rochester
Brown, H. A.....Rochester
‡Brown, J. R.....Rochester
‡Brown, M. H.....Rochester
‡Brown, P. W.....Rochester
‡Browne, H. C., Jr.....Rochester
Brunsting, L. A.....Rochester
‡Bryson, J. C.....Rochester
‡Buck, R. M.....Rochester
Buie, L. A.....Rochester
†Burchell, H. B.....Rochester
Burdon, Phyllis J.....Rochester
Burkhart, R. J.....Rochester
‡Butt, H. R.....Rochester
‡Caldwell, H. W.....Rochester
‡Call, J. D.....Rochester
Calmenson, Marvin .....Rochester
Cameron, J. M.....Rochester
‡Camp, J. D.....Rochester
‡Camphell, C. M.....Rochester
‡Camphell, D. C.....Rochester
‡Campbell, J. R.....Rochester
‡Canfield, W. W.....Houston

Carmona, M. G.....Rochester
Carryer, H. M.....Rochester
Ceder, E. T.....Rochester
‡Chapman, A. S.....Rochester
Christensen, N. A.....Rochester
Clagett, O. T.....Rochester
Clarke, L. W.....Spring Valley
‡Clarke, E. T.....Rochester
Clarkson, W. R.....Rochester
Clifton, T. A.....Chatfield
‡Cleveland, W. H.....Rochester
Cluxton, H. E., Jr.....Rochester
Comfort, M. W.....Rochester
‡Condon, W. B.....Rochester
†Conner, H. M.....Rochester
Connolly, C. J.....Rochester
Cook, E. N.....Rochester
‡Cooper, Talbert.....Rochester
Cooper, W. L.....Rochester
Copsey, H. G.....Rochester
Corbitt, R. W.....Rochester
Counseller, V. S.....Rochester
‡Coventry, M. B.....Rochester
‡Cragg, R. W.....Rochester
‡Craig, W. McK.....Rochester
Crenshaw, J. L.....Rochester
Crewe, J. E.....Rochester
Cronk'te, A. E.....Rochester
‡Cummings, D. W.....Rushford
‡Cunningham, B. P.....Rochester
‡Cusick, P. L.....Rochester
Custer, M. D., Jr.....Rochester
Dahleen, H. C.....Rochester
Darling, J. P.....Rochester
Daugherty, G. W.....Rochester
Davies, L. T.....Rochester
Davis, A. C.....Rochester
Davis, I. G.....Rushford
Day, Lois.....Rochester
Dearing, W. H.....Rochester
‡Demong, C. V.....Rochester
Desjardins, A. U.....Rochester
Deterling, R. A., Jr.....Rochester

Dixon, C. F. ..... Rochester
Dobyns, B. M. ..... Rochester
Dockerty, M. B. ..... Rochester
Donoghue, F. E. ..... Rochester
Douglass, B. E. ..... Rochester
†Drake, F. A. ..... Lanesboro
‡Drapiewski, J. F. ..... Rochester
Drips, Della G. ..... Rochester
‡Dry, T. J. ..... Rochester
DuMais, A. F. ..... Rochester
Dunlap, D. L. ..... Rochester

Eaton, L. McK. ..... Rochester
‡Egan, Sherman ..... Rochester
Ehni, G. J. ..... Rochester
Elkins, E. C. ..... Rochester
Ellingson, E. A. ..... Rochester
Ellison, A. B. C. ..... Rochester
‡Emerson, G. F. ..... Rochester
Emmett, J. L. ..... Rochester
Erich, J. B. ..... Rochester
‡Erickson, C. O. ..... Rochester
Erickson, D. J. ..... Rochester
Erickson, E. W. ..... Rochester
Evans, C. H., Jr. ..... Rochester
†Evarts, A. B. ..... Rochester
Eusterman, G. B. ..... Rochester

Faber, J. E. ..... Rochester
Faber, W. M. ..... Rochester
Fahlund, G. T. R. ..... Rochester
Fair, E. E. ..... Rochester
‡Fawcett, R. M. ..... Rochester
Feldman, F. M. ..... Rochester
‡Ferguson, F. F. ..... Detroit, Mich.
‡Ferguson, W. J., Jr. ..... Rochester
Ferguson, Wilson J. ..... Rochester
Ferris, D. O. ..... Rochester
Figi, F. A. ..... Rochester
Fischer, Albert ..... Rochester
Flickinger, F. M. ..... Rochester
‡Flinn, J. H. ..... Rochester
Foerster, J. M. ..... Rochester
Fogarty, C. W., Jr. ..... Rochester
‡Forney, R. A. ..... Rochester
Fortner, Lucille L. ..... Rochester
Foss, E. L. ..... Rochester
‡Foster, M. A. ..... Rochester
Foster, T. N. ..... Rochester
Fricke, R. E. ..... Rochester
‡Friedell, M. T. ..... Rochester

Gaarde, F. W. ..... Rochester
Gaarde, F. W., Jr. ..... Rochester
Gambill, E. E. ..... Rochester
Gelbach, P. D. ..... Rochester
Gentry, R. W. ..... Rochester
Ghormley, R. K. ..... Rochester
‡Giffin, H. M. ..... Rochester
Giffin, H. Z. ..... Rochester
Gilbertson, Eva L. ..... Rochester
‡Gillespie, D. R. ..... Rochester
Glenn, D. L. ..... Rochester
‡Glomset, D. A. ..... Rochester
Glover, R. P. ..... Rochester
Golden, P. B. ..... Rochester
Good, C. A., Jr. ..... Rochester
‡Gore, H. R. ..... Rochester
‡Gorsuch, M. T. ..... Rochester
‡Graham, F. M. ..... Rochester
Graham, R. B. ..... Rochester
‡Graham, R. J. ..... Rochester
‡Gray, H. K. ..... Rochester
Green, W. S. ..... Rochester
Greene, L. F. ..... Rochester
‡Grindlay, J. H. ..... Rochester
‡Guernsey, D. E. ..... Rochester
Guthrie, R. F. ..... Rochester

Habein, H. C. ..... Rochester
Hagedorn, A. B. ..... Rochester
Haines, R. D. ..... Rochester
Haines, S. F. ..... Rochester
‡Haisten, A. S. ..... Rochester
Hall, B. E. ..... Rochester
Hallberg, O. E. ..... Rochester
Hallenbeck, D. F. ..... Rochester
‡Hallenbeck, G. A. ..... Rochester
Hamm, R. S. ..... Rochester
Hammes, E. M., Jr. ..... Rochester
‡Hanlon, G. H. ..... Rochester
‡Hanson, N. O. ..... Rochester
Hargraves, M. M. ..... Rochester
‡Harley, R. D. ..... Rochester
‡Harper, S. B. ..... Rochester
Harrington, S. W. ..... Rochester
Hartman, H. R. ..... Rochester
‡Harvey, George, Jr. ..... Rochester
Havens, F. Z. ..... Rochester
Hawkins, W. J. ..... Rochester
Heck, F. J. ..... Rochester
Heersema, P. H. ..... Rochester
Heilman, Dorothy M. H. ..... Rochester
Heilman, F. R. ..... Rochester
Heim, D. J. ..... Rochester
‡Heinrich, W. A. ..... Rochester
Helland, G. M. ..... Spring Grove
Helland, J. W. ..... Spring Grove
Helmholz, H. F. ..... Rochester
Hempstead, B. E. ..... Rochester

‡Hench, P. S. ..... Rochester
‡Henderson, J. W. ..... Rochester
Henderson, L. L. ..... Rochester
Henderson, M. S. ..... Rochester
Herbst, R. F. ..... Wykoff
Herrell, W. E. ..... Rochester
Hewitt, Edith S. ..... Rochester
†Hewitt, R. M. ..... Rochester
†Heyerdale, O. C. ..... Rochester
‡Heyerdale, W. W. ..... Rochester
‡Higginson, J. F. ..... Rochester
‡Hill, J. R. ..... Rochester
Hines, E. A., Jr. ..... Rochester
Hinshaw, H. C. ..... Rochester
Hoaglund, P. I., Jr. ..... Rochester
Hodgson, C. H. ..... Lima, Peru
Hodgson, Jane E. ..... Rochester
Hopping, R. A. ..... Rochester
Horton, B. T. ..... Rochester
Howell, L. P. ..... Rochester
Hoyer, L. P., Jr. ..... Rochester
Hoyne, R. M. ..... Rochester
‡Hughes, T. J. ..... Rochester
Hunt, A. B. ..... Rochester
‡Hunter, O. B. ..... Rochester
Hurwitz, M. M. ..... Rochester
Hutchins, S. P. ..... Rochester

Iams, A. M. ..... Rochester
Iverson, H. A. ..... Rochester
Iverson, R. M. ..... Rochester
‡Ivie, J. McK. ..... Rochester

Jackman, R. J. ..... Rochester
Jarboe, I. P. ..... Rochester
‡Johnson, C. R. ..... Rochester
Johnson, H. P. ..... Rochester
Johnson, J. R. ..... Rochester
Johnson, R. B. ..... Lanesboro
Johnson, R. H. ..... Rochester
‡Joss, C. S. ..... Rochester
‡Joyce, G. L. ..... Rochester
Judd, D. B. ..... Rochester
‡Judd, E. S. ..... Rochester
‡Jump, W. C. ..... Kasson

‡Kapernick, J. S. ..... Rochester
Kaplan, J. J. ..... Rochester
‡Kauver, A. J. ..... Rochester
Keating, F. R., Jr. ..... Rochester
Keith, H. M. ..... Rochester
Keith, N. M. ..... Rochester
‡Kemper, C. M. ..... Rochester
Kennedy, R. L. J. ..... Rochester
‡Kennedy, T. J. ..... Rochester
Kepler, E. J. ..... Rochester
Kern, C. E. ..... Rochester
Kernohan, J. W. ..... Rochester
‡Kierland, R. R. ..... Rochester
Kiernan, P. C. ..... Rochester
Kirkland, W. G. ..... Rochester
Kirklin, B. R. ..... Rochester
Kirklin, O. L. ..... Rochester
‡Klinkenberg, R. B. ..... Rochester
Klontz, C. E., Jr. ..... Rochester
Kloos, E. K. ..... Rochester
Koelsche, G. A. ..... Rochester
Kratzer, G. L. ..... Rochester
‡Kreilkamp, B. L. ..... Rochester
Krusen, F. H. ..... Rochester
Kvale, W. F. ..... Rochester

Lake, C. F. ..... Rochester
Lander, H. H. ..... Rochester
Lannin, J. C. ..... Mabel
‡Large, H. R. ..... Rochester
‡Larrabee, W. F., Jr. ..... Rochester
Larson, R. A. ..... Rochester
Latchem, C. W. ..... Rochester
‡Leary, W. V. ..... Rochester
Leddy, E. T. ..... Rochester
‡Lehnhoff, H. J., Jr. ..... Rochester
Lemon, W. E. ..... Rochester
Lemon, W. S. ..... Rochester
Levin, Louis ..... Rochester
Levinson, J. P. ..... Rochester
Lichtman, A. L. ..... Rochester
‡Lien, R. J. ..... Rochester
Lillie, H. I. ..... Rochester
‡Lillie, J. C. ..... Rochester
‡Lindahl, W. W. ..... Rochester
Lipscomb, P. R. ..... Rochester
‡Little, A. G. ..... Rochester
Lobitz, W. C., Jr. ..... Rochester
†Lochead, D. C. ..... Rochester
Lofgren, K. A. ..... Rochester
Logan, A. H. ..... Rochester
Logan, G. B. ..... Rochester
Long, G. C. ..... Rochester
Long, R. C. ..... Rochester
Love, J. G. ..... Rochester
‡Lovelace, W. R. ..... Rochester
‡Lovelady, S. B. ..... Rochester
‡Lovering, Joseph ..... Rochester
‡Lovshin, L. L. ..... Rochester
‡Luckey, C. A. ..... Rochester
*Luden, Georgine. Victoria, B. C., Can.
‡Lueck, A. G. ..... Rochester
Lundy, J. S. ..... Rochester
Lynch, R. C. ..... Rochester

MacCarty, C. S. ..... Rochester
†MacCarty, W. C. ..... Rochester
‡Macey, H. B. ..... Rochester
‡MacKay, H. J. ..... Seattle, Wash.
‡MacLean, A. R. ..... Rochester
‡Magath, T. B. ..... Rochester
Manlove, F. R. ..... Rochester
†Mann, F. C. ..... Rochester
Manning, J. J. ..... Rochester
Marr, G. E. ..... Rochester
Martin, G. M. ..... Rochester
‡Marvin, C. P. ..... Rochester
Masson, D. M. ..... Rochester
Masson, J. C. ..... Rochester
‡Mayo, C. W. ..... Rochester
‡Maytum, C. K. ..... Rochester
‡McCall, C. H. ..... Rochester
McCallig, J. J. ..... Rochester
McClellan, G. T. ..... Rochester
McCloud, C. N. Jr. ..... Rochester
McDonald, J. R. ..... Rochester
‡McEachern, C. G. ..... Rochester
McKaig, C. B. ..... Pine Island
McKibbin, J. P. ..... Rochester
McNairy, D. J. ..... Rochester
Melton, T. J. ..... Rochester
‡Merritt, W. A. ..... Rochester
‡Messler, J. D. ..... Rochester
Metcalfe, R. M. ..... Rochester
Meyers, W. C. ..... Rochester
Meyerding, H. W. ..... Rochester
Millen, F. J. ..... Rochester
Miller, J. R., Jr. ..... Rochester
‡Miller, R. C. ..... Rochester
Miller, Sidney ..... Rochester
Moe, A. E. ..... Rochester
Moersch, F. P. ..... Rochester
Moersch, H. J. ..... Rochester
Montgomery, Hamilton ..... Rochester
Morlock, C. G. ..... Rochester
‡Mousel, L. H. ..... Rochester
Multhauf, C. J. ..... Rochester
Murphy, J. T. ..... Rochester
Murphy, M. E. ..... Rochester
Murray, N. A. ..... Rochester
‡Murray, R. A. ..... Rochester
‡Musgrove, J. E. ..... Rochester
Mussey, Mary E. ..... Rochester
Mussey, R. D. ..... Rochester
Mussey, Robert D. ..... Rochester

*Nass, H. A. ..... Mabel
Nay, R. M. ..... Rochester
‡Neale, R. M. ..... Rochester
Nehring, J. P. ..... Preston
Nester, H. D. ..... Rochester
New, G. B. ..... Rochester
Nichols, D. R. ..... Rochester
‡Nickel, W. R. ..... Rochester
Norris, N. T. ..... Caledonia
Northrup, W. F., Jr. ..... Rochester
Notier, V. A. ..... Rochester

‡Odel, H. M. ..... Rochester
O'Leary, P. A. ..... Rochester
Olsen, A. M. ..... Rochester
Olson, E. A. ..... Pine Island
‡Olson, G. E. ..... West Concord
‡Olson, J. D. ..... Rochester
Olson, S. W. ..... Rochester
Onsgard, L. K. ..... Houston
Owens, A. H., Jr. ..... Rochester

Padgett, H. O. ..... Rochester
Parker, R. L. ..... Rochester
Parkhill, Edith M. ..... Rochester
‡Pattison, D. H. ..... Rochester
‡Paulson, D. L. ..... Rochester
Paulson, J. A. ..... Rochester
Payne, J. H. ..... Rochester
Pearson, D. J. ..... Rochester
Pemberton, J. deJ. ..... Rochester
‡Pender, J. W. ..... Rochester
‡Pennington, R. E. ..... Rochester
‡Perry, T. T. ..... Rochester
Peters, G. A. ..... Rochester
‡Peterson, W. G. ..... Rochester
‡Phalen, G. S. ..... Rochester
Piper, M. C. ..... Rochester
‡Plimpton, N. C., Jr. ..... Rochester
Plummer, W. A. ..... Rochester
Polley, H. F. ..... Rochester
Pollock, L. W. ..... Rochester
‡Polmeteer, F. E. ..... Rochester
Pool, T. L. ..... Rochester
Popovich, S. J. ..... Rochester
Popp, W. C. ..... Rochester
Powers, F. H. ..... Rochester
Prangen, A. D. ..... Rochester
Pratt, J. H., Jr. ..... Rochester
‡Preston, F. W. ..... Rochester
Preston, L. F. ..... Rochester
Prickman, L. E. ..... Rochester
‡Priestley, J. T. ..... Rochester
Proudfit, C. H. ..... Rochester
Pruitt, R. D. ..... Rochester
Pugh, D. G. ..... Rochester

Quattlebaum, Frank ..... Rochester

Radcliffe, James, Jr.....Rochester
Randall, L. M.....Rochester
‡Rasmussen, W. C.....Rochester
Raszkowski, H. J.....Rochester
Regan, J. M.....Rochester
‡Richardson, R. J.....Rushford
Richardson, W. E.....Rushford
Rinehart, R. E.....Rochester
Risser, A. F.....Stewartville
Rivers, A. B.....Rochester
Rives, H. F.....Rochester
Robertson, H. E.....Rochester
Robinson, F. J.....Rochester
Robson, J. T.....Rochester
‡Rogers, J. D.....Rochester
‡Rogne, W. G.....Spring Grove
Rosenow, E. C.....Rochester
‡Rosenow, J. H.....Rochester
Roth, R. R.....Rochester
Rousuck, A. A.....Rochester
Rowland, W. D.....Rochester
Rucker, C. W.....Rochester
‡Rulison, E. T., Jr.....Rochester
Rushton, J. G.....Rochester
Russ, F. H.....Rochester
Ryan, B. F.....Rochester
Rynearson, E. H.....Rochester

Sanford, A. H.....Rochester
Sauer, W. G.....Rochester
‡Sayre, G. P.....Rochester
‡Scales, J. R.....Rochester
Scheetz, R. J.....Rochester
Scheifley, C. H.....Rochester
‡Schlicke, C. P.....Rochester
‡Schmidt, H. W.....Rochester
‡Schmitt, G. F., Jr.....Rochester
Schmitz, R. L.....Rochester
‡Schneider, H. H.....Rochester
Scholten, R. A.....Rochester
‡Sealy, W. B.....Rochester
Seefeld, P. H.....Rochester
Seldon, T. H.....Rochester
Sengpiel, G. W.....Rochester
Seybold, W. D.....Rochester
Shands, H. C.....Rochester
‡Sharpe, W. S.....Minneapolis
‡Shelden, J. T.....Rochester
Shelden, W. D.....Rochester
‡Shepard, V. D.....Rochester
Sheridan, R. B., Jr.....Rochester
‡Shick, R. M.....Rochester
Shonyo, E. S.....Rochester
Shullenberger, C. C.....Rochester
‡Sidell, C. M.....Rochester
Sidell, R. H.....Rochester
‡Simonton, K. M.....Rochester
‡Skaug, H. M.....Chatfield
Slocumb, C. H.....Rochester
Sluder, F. S., Jr.....Rochester
Smalley, R. E.....Rochester
Smith, F. D.....Rochester
‡Smith, F. H.....Rochester
Smith, F. L.....Rochester
Smith, H. L.....Rochester
‡Smith, L. A.....Rochester
Smith, N. D.....Rochester
‡Snell, A. M.....Rochester
Snider, G. G.....Rochester
Spar, A. A.....Rochester
Sprague, R. G.....Rochester
Stark, F. M.....Rochester
Stickney, J. M.....Rochester
Stilwell, G. G.....Rochester
Stotler, J. F.....Rochester
‡Stout, H. A.....Rochester
‡Stover, Lee.....Rochester
Stroebel, C. F., Jr.....Rochester
‡Strom, G. W.....Rochester
Stuhler, L. G.....Rochester
†Sutherland, C. G.....Rochester
‡Svien, H. J.....Rochester
Sweeney, A. R., Jr..San Diego, Calif.
‡Taylor, J. C.....Rochester
Thomas, H. R.....Rochester
Thomas, J. F.....Rochester
‡Thompson, G. J.....Rochester
Thornell, W. C.....Rochester
Tice, A. W.....Rochester
Tice, G. I.....Rochester
‡Tillisch, J. H.....Rochester
Tinney, W. S., Jr.....Rochester
Tompkins, S. F.....Rochester
Tosseland, N. E.....Rochester
Treusch, J. V.....Rochester
Trimingham, H. G. L.....Rochester
‡Tuohy, E. B.....Rochester
Turner, T. R.....Rochester
‡Tweedy, J. A.....Rochester
‡Twyman, R. A.....Rochester
Uihlein, Alfred.....Rochester
‡Underdahl, L. O.....Rochester
Urban, D. A.....Rochester

Vadheim, J. L.....Burien, Wash.
‡Van Demark, R. E.....Rochester
‡Vaughn, L. D.....Rochester
Vickers, P. M.....Rochester

Wagener, H. P.....Rochester
Wakefield, E. G.....Rochester
‡Wallace, G. T.....Rochester
‡Walsh, M. N.....Rochester
‡Walters, Waltman.....Rochester
Ward, B. H.....Rochester
‡Watkins, C. H.....Rochester
Watkins, D. H.....Rochester
Waugh, J. M.....Rochester
Weber, H. M.....Rochester
Weir, J. F.....Rochester
‡Weisel, Wilson.....Rochester
‡Weismann, R. E.....Rochester
Wellner, T. O.....Rochester
‡Wells, G. R.....Rochester
‡White, J. D.....Rochester
‡White, R. R., III.....Rochester
‡Whitehouse, F. R.....Rochester
Whitlock, G. F.....Rochester
Wilder, R. M.....Rochester
Wilder, R. M., Jr.....Rochester
Williams, H. L.....Rochester
Williams, R. V.....Chicago, Ill.
Willius, F. A.....Rochester
‡Willson, D. M.....Rochester
‡Wilson, G. T.....Rochester
Wilson, H. T.....Rochester
‡Wilson, K. G.....Rochester
*Wilson, L. B.....Rochester
Winter, I. F.....Rochester
Wollaeger, E. E.....Rochester
Woltman, H. W.....Rochester
Wood, H. G.....Rochester
Wood, W. D.....Rochester
‡Wood, W. W., Jr.....Rochester
Woodruff, C. W.....Chatfield
Wozencraft, J. P.....Rochester
‡Wulf, R. F.....Rochester

‡Yeager, C. L.....Rochester
Young, H. H.....Rochester

Zuschlag, Ella.....Rochester

PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Douglas, Grant, Otter Tail and Wilkin Counties
Annual meeting, December
Number of Members: 63

President
Boline, C. A.....Battle Lake

Secretary
Thompson, H. B.....Fergus Falls

Arndt, H. W.....Detroit Lakes

Baker, A. C.....Fergus Falls
Baker, Jeannette L.....Fergus Falls
Baker, N. H.....Fergus Falls
Bergquist, K. E.....Battle Lake
Blakey, A. R.....Osakis
Boline, C. A.....Battle Lake
Boyd, L. M.....Alexandria
‡Boysen, J. E.....Pelican Rapids
Boysen, Peter.....Pelican Rapids
Broker, W. S.....Wadena
Burnap, W. L.....Fergus Falls
Clifford, G. W.....Alexandria
Combacker, L. C.....Fergus Falls
Drought, W. W.....Fergus Falls
Esser, John.....Perham
Estrem, C. O.....Fergus Falls
‡Estrem, R. D.....Fergus Falls
‡Freeman, W. N.....Perham
Griswold, F. E.....Hoffman
Hanson, E. C.....New York Mills
Haskell, A. D.....Alexandria
Heiberg, E. A.....Fergus Falls
Jacobs, G. C.....Fergus Falls
Johnson, O. V.....Fergus Falls
Kierland, P. E.....Alexandria
Leibold, H. H.....Parkers Prairie
‡Leighton, Robert.....Evansville
Lewis, A. J.....Henning
Love, F. A.....Carlos
Lund, C. J. T.....Fergus Falls
‡McElligott, E. W.....Breckenridge
McLane, W. O.....Perham
‡McMahon, L. H.....Breckenridge
Miller, W. A.....New York Mills
‡Mouritsen, G. J.....Fergus Falls
Naegeli, Frank.....Fergus Falls
‡Nelson, R. A.....Fergus Falls
Nelson, W. O. B.....Fergus Falls
Parson, L. R.....Elbow Lake
Parson, Lillian B.....Elbow Lake
Patterson, W. L.....Fergus Falls
Paulson, T. S.....Fergus Falls
‡Paulson, E. C.....Elbow Lake
Randall, A. M.....Ashby
Reeve, E. T.....Elbow Lake
Rimer, E. W.....Breckenridge
Satersmoen, Theodore...Pelican Rapids
Sather, E. R.....Alexandria
‡Schamher, W. F.....Parkers Prairie
‡Schleinitz, F. B.....Battle Lake
Selvig, H. S.....Alexandria
Serkland, J. C.....Rothsay
Siegel, Clarence.....Oak Terrace
‡Stemsrud, H. L.....Alexandria
Sutton, H. R.....Hoffman
Tanquist, E. J.....Alexandria
Thompson, H. B.....Fergus Falls
‡Vail, J. B.....Henning
Warner, J. J.....Perham
‡Wasson, L. F.....Alexandria
‡Webster, L. J.....Battle Lake
Wray, W. E.....Campbell

RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday in every month excepting June, July, August
Annual meeting, last Monday in January
Number of Members: 373

President
Lepak, J. A.....St. Paul

Secretary
Williams, C. K.....St. Paul

Abbott, J. S.....St. Paul
‡Adair, A. F., Jr.....St. Paul
Ahrens, A. E.....St. Paul
Ahrens, A. H.....St. Paul
Alberts, M. W.....St. Paul
Alden, J. F.....St. Paul
†Alexander, F. H.....St. Paul
†Armstrong, J. M.....St. Paul
Arnquist, A. S.....St. Paul
‡Arzt, P. K.....St. Paul
Aurelius, J. R.....St. Paul
Ausman, C. F.....St. Paul
Bacon, D. K.....St. Paul
†Bacon, L. C.....St. Paul
‡Balcome, M. M.....St. Paul
‡Barnes, R. G., Jr.....Hastings
Barry, L. W.....St. Paul
Barsness, Nellie O. N.....St. Paul
Beals, Hugh.....St. Paul
Beech, R. H.....St. Paul
‡Beek, H. O.....St. Paul
‡Beer, J. J.....St. Paul
Bell, C. C.....St. Paul
Benepe, J. L.....St. Paul
Bennion, P. H.....St. Paul
Bentley, N. P.....St. Paul
‡Bernstein, W. C.....St. Paul
Bicek, J. F.....St. Paul
Binger, H. E.....St. Paul
Birnberg, T. L.....St. Paul
Bock, R. A.....St. Paul
Boeckmann, Egil.....St. Paul
Bolender, H. L.....St. Paul
‡Borg, J. F.....St. Paul
Bouma, L. R.....St. Paul
Brand, G. D.....St. Paul
Bray, E. R.....St. Paul
Briggs, J. F.....St. Paul
Broadie, T. E.....St. Paul
Brodie, W. D.....St. Paul
†Brown, E. I.....St. Paul

Brown, J. C.....St. Paul
‡Bulinski, T. J.....St. Paul
‡Burch, E. P.....St. Paul
‡Burch, F. E.....St. Paul
Burns, R. M.....St. Paul
Burton, C. G.....St. Paul
Busher, H. H.....St. Paul
‡Cain, C. L.....St. Paul
*Caldwell, J. P.....St. Paul
Carley, W. A.....St. Paul
Carroll, W. C.....St. Paul
Chadbourn, C. R.....St. Paul
Chatterton, C. C.....St. Paul
Christiansen, A.....St. Paul
†Christison, J. T.....St. Paul
‡Clark, H. B., Jr.....St. Paul
Clarke, E. K.....St. Paul
‡Cochrane, B. B.....St. Paul
‡Coddon, W. D.....St. Paul
Colby, W. L.....St. Paul
Cole, W. H.....St. Paul
†Collie, H. G.....St. Paul
Colvin, A. R.....St. Paul
Conlin, L. J.....North St. Paul
Connor, C. E.....St. Paul
‡Cook, C. K.....St. Paul
‡Cooper, C. C.....St. Paul
Countryman, R. S.....St. Paul
†Cowern, E. W.....No. St. Paul
Critchfield, L. R.....St. Paul
Crombie, F. J.....No. St. Paul
Crump, J. W.....St. Paul
Culligan, J. M.....St. Paul

Dack, L. G.....St. Paul
†Daugherty, E. B., Marine-on-St. Croix
Daugherty, L. E.....St. Paul
Davis, E. V.....St. Paul
†Davis, Herbert.....St. Paul
†Davis, William.....St. Paul
DeCourcey, D. M.....St. Paul
Dedolph, Karl.....St. Paul
*Delavan, P. A.....St. Paul
Derauf, B. I.....St. Paul
Dickson, T. H.....St. Paul
Dittman, G. C.....St. Paul
Donohue, P. F.....St. Paul
Dovre, C. M.....St. Paul
Drake, C. B.....St. Paul
Dunn, J. N.....St. Paul

Earl, George.....St. Paul
‡Earl, John.....St. Paul
Earl, Robert.....St. Paul
Edlund, G.....St. Paul
‡Edwards, J. W.....St. Paul
Edwards, T. J.....St. Paul
‡Eginton, C. T.....St. Paul
Ely, O. S.....South St. Paul
Emerson, E. C.....St. Paul
Endress, E. K.....St. Paul
Enroth, O. E.....White Bear Lake
Ernest, G. C. H.....South St. Paul
†Eshelby, E. C.....St. Paul
†Fahey, E. W.....St. Paul
Ferguson, J. C.....St. Paul
Fesler, H. H.....St. Paul
Flanagan, H. F.....St. Paul
Fogarty, C. W.....St. Paul
Fogelberg, E. J.....St. Paul
Foley, F. E. B.....St. Paul
Freeman, C. D.....St. Paul
Freidman, L. L.....St. Paul
Fritz, W. L.....St. Paul
Froats, C. W.....St. Paul
Gager, E. C.....St. Paul
Garbrecht, Arthur.....St. Paul
Gardiner, D. G.....St. Paul
Gardner, W. P.....St. Paul
Geer, E. K.....St. Paul
Gehlen, J. N.....St. Paul
Geist, G. A.....St. Paul
Ghent, C H.....St. Paul
Gibbs, E. C.....St. Paul
†Gilfillan, J. S.....St. Paul
Gilkey, S. E.....St. Paul
Ginsberg, Wm.....St. Paul
Goltz, E. V.....St. Paul
Grant, H. W.....St. Paul
Gratzek, Thomas.....St. Paul
‡Grau, R. K.....St. Paul
Gruenhagen, A. P.....St. Paul
‡Haavik, J. E.....St. Paul
Hall, A. R.....St. Paul
Hall, H. H.....St. Paul
Hammes, E. M.....St. Paul
Hammond, J. F.....St. Paul
Hanson, H. B.....St. Paul
Harmon, G. E.....St. Paul
Hartfiel, W. F.....St. Paul
Hartig, Marjorie.....St. Paul
Hartley, E. C.....St. Paul
Hassett, M. F.....St. Paul
Hauser, V. P.....St. Paul
*Heath, A. C.....Stillwater
‡Heck, W. W.....St. Paul
Hedenstrom, F. G.....St. Paul
Hengstler, W. H.....St. Paul

Hensel, C. N.....St. Paul
‡Herman, Samuel.....St. Paul
Heron, R. C.....St. Paul
Herrmann, E. T.....St. Paul
Hertz, M. J.....St. Paul
Hilger, A. W.....St. Paul
Hilger, D. D.....St. Paul
‡Hilger, J. A.....St. Paul
Hilger, L. A.....St. Paul
Hilger, L. D.....St. Paul
Hiniker, L. P.....St. Paul
Hochfilzer, J. J.....St. Paul
Hoff, Alfred.....St. Paul
Hoffman, M. H.....St. Paul
Holcomb, O. W.....St. Paul
Holmen, R. W.....St. Paul
Holt, J. E.....St. Paul
‡Hopkins, G. W.....St. Paul
Howard, M. A.....St. Paul
Howard, W. S.....St. Paul
Hullsiek, H. E.....St. Paul
‡Hullsiek, R. B.....St. Paul

Ide, A. W.....St. Paul
Ikeda, Kano.....St. Paul
Ingerson, C. A.....St. Paul
‡Janssen, M. E.....St. Paul
Jesion, J. W.....St. Paul
‡Johnason, W. G.....St. Paul
Johnson, A. M.....St. Paul
Johnson, C. E.....St. Paul
Johnson, J. A.....St. Paul
Jones, E. M.....St. Paul

Kamman, G. R.....St. Paul
‡Kaplan, D. H.....St. Paul
‡Karn, J. F.....St. Paul
‡Karon, I. M.....St. Paul
Kasper, E. M.....St. Paul
‡Katzovitz, Hyman.....St. Paul
Keefe, Rolland.....St. Paul
Kelly, J. V.....St. Paul
Kelly, P. H.....St. Paul
‡Kenefick, E. V.....St. Paul
Kennedy, W. A.....St. Paul
Kenyon, T. J.....St. Paul
Kesting, Herman.....St. Paul
Klein, H. N.....St. Paul
Knauff, M. K.....St. Paul
‡Koepsell, A. A. H.....St. Paul
Kugler, A. A.....St. Paul
Kuske, A. W.....St. Paul
Kvitrud, Gilbert.....St. Paul

†Langenderfer, F. V.....St. Paul
Larsen, C. L.....St. Paul
Larson, Eva-Jane.....St. Paul
‡Lauer, D. J.....St. Paul
Lax, M. H.....St. Paul
Leahy, Bartholomew.....St. Paul
Leavenworth, R. O.....St. Paul
‡Leick, R. M.....St. Paul
Leitch, Archibald.....St. Paul
Lepak, J. A.....St. Paul
†Lerche, William.....Cable, Wis.
Leven, N. L.....St. Paul
Levin, Bert.....St. Paul
Levitt, G. X.....St. Paul
Lick, C. L.....St. Paul
Lightbourn, E. L.....St. Paul
Lilleberg, N. J.....St. Paul
Lippman, H. S.....St. Paul
†Little, W. J.....St. Paul
Loken, S. M.....St. Paul
Lowe, E. R.....South St. Paul
Lowe, T. A.....South St. Paul
Lundholm, A. M.....St. Paul
Lynch, F. W.....St. Paul

Madden, J. F.....St. Paul
‡Marks, R. W.....St. Paul
Martin, D. L.....So. St. Paul
Martineau, J. L.....St. Paul
‡Mattson, C. H.....St. Paul
McCain, D. L.....St. Paul
McCarthy, J. J.....St. Paul
McCarthy, W. R.....St. Paul
McClanahan, J. H.....White Bear
McClanahan, T. S.....White Bear
McEwan, Alexander.....St. Paul
†McLaren, Jennette M.....Minneapolis
Meade, J. R.....St. Paul
‡Mears, B. J.....St. Paul
‡Medelman, J. P.....St. Paul
Meyerding, E. A.....St. Paul
Moga, J. A.....St. Paul
Molander, H. A.....St. Paul
Moquin, Marie A.....St. Paul
‡Moren, L. A.....St. Paul
Moriarty, Berenice.....St. Paul
*Morrissey, F. B.....St. Paul
Muller, R. T.....St. Paul
‡Naegeli, A. E.....St. Paul
Nelson, L. A.....St. Paul
‡Newell, F. W.....St. Paul
Nichols, A. E.....St. Paul
Noble, J. F.....St. Paul
‡Noble, J. L.....St. Paul
‡Nuebel, C. J.....St. Paul

Nye, Katherine A.....St. Paul
Nye, Lillian L.....St. Paul
‡O'Brien, W. M.....St. Paul
‡O'Connor, L. J.....St. Paul
Oerting, Harry.....St. Paul
‡Ogden, Warner.....St. Paul
Ohage, Justus, Jr.....St. Paul
‡Olsen, R. L.....St. Paul
Olson, C. A.....St. Paul
O'Reilley, B. E.....St. Paul
Ostergren, E. W.....St. Paul
Ouelette, A. J.....St. Paul
Pearson, F. R.....St. Paul
Pearson, M. M.....St. Paul
Pederson, A. H.....St. Paul
Perry, C. G.....St. Paul
‡Peterson, D. B.....St. Paul
Peterson, H. O.....St. Paul
Peterson, J. L. E.....St. Paul
Peterson, V. N.....St. Paul
Plondke, F. J.....St. Paul
Prendergast, H. J.....St. Paul
Radabaugh, R. C.....Hastings
‡Ramsey, R. M.....St. Paul
†Ramsey, W. R.....St. Paul
Rasmussen, R. C.....St. Paul
‡Rea, C. E.....St. Paul
‡Reif, H. J.....St. Paul
Richards, E. T. F.....St. Paul
Richardson, H. E.....St. Paul
‡Rick, P. F. W.....St. Paul
‡Ritchie, W. P.....St. Paul
Ritt, A. E.....St. Paul
Rogers, S. F.....St. Paul
Rosenbladt, Louis.....St. Paul
‡Rosenholtz, Burton.....St. Paul
Rosenthal, Robert.....St. Paul
Roth, G. C.....St. Paul
*Rothrock, J. L.....St. Paul
Rothschild, H. J.....St. Paul
Roy, P. C.....St. Paul
Ruhberg, G. N.....St. Paul
Rutherford, W. C.....St. Paul
Ryan, J. J.....St. Paul
‡Ryan, J. M.....St. Paul
Ryan, M. E.....St. Paul

Sarnecki, M. M.....St. Paul
Satterlund, V. L.....St. Paul
Savage, F. J.....St. Paul
Schmidtke, R. L.....St. Paul
Schoch, R. B.....St. Paul
Schons, Edward.....St. Paul
‡Schroeckenstein, H. F.....St. Paul
Schuldt, F. C.....St. Paul
Schulze, A. G.....St. Paul
*Schwyzer, Arnold.....St. Paul
‡Schwyzer, H. C.....St. Paul
Scott, E. E.....St. Paul
†Senkler, G. E.....St. Paul
Setzer, H. J.....St. Paul
Shannon, W. R.....St. Paul
†Shellman, J. L.....St. Paul
‡Shimonek, S. W.....St. Paul
‡Short, Jacob.....St. Paul
†Simons, L. T.....St. Paul
Singer, B. J.....St. Paul
Skinner, H. O.....St. Paul
Smisek, E. A.....St. Paul
Smith, V. D. E.....St. Paul
Snyder, G. W.....St. Paul
Sohlberg, O. I.....St. Paul
Sommers, Ben.....St. Paul
‡Sorem, M. B.....St. Paul
Souster, B. B.....St. Paul
Sorafka, J. M.....St. Paul
‡Steinberg, C. L.....St. Paul
Sterner, E. G.....St. Paul
Sterner, E. R.....St. Paul
Sterner, O. W.....St. Paul
Stewart, Alexander.....St. Paul
Stinnette, S. E.....St. Paul
Stolpestad, A. H.....St. Paul
‡Stolpestad, H. L.....St. Paul
Strate, G. E.....St. Paul
‡Strauss, M. L.....St. Paul
Swanson, J. A.....St. Paul
Swendson, J. J.....St. Paul

Teisberg, C. B.....St. Paul
‡Thompson, F. A.....St. Paul
*Thoreson, M. O.....South St. Paul
‡Tift, C. R.....St. Paul
Tracht, R. R.....St. Paul
‡Travis, J. S.....St. Paul
Tregilgas, H. R.....South St. Paul

Veirs, Dean.....St. Paul
Veirs, Ruby S.....St. Paul
Venables, A. E.....St. Paul
Von der Weyer, William.....St. Paul

Waas, C. W.....St. Paul
‡Walker, A. E.....St. Paul
‡Walsh, F. M.....St. Paul
‡Walter, C. W.....St. Paul
Warnock, R. W.....St. Paul
‡Warren, C. A.....St. Paul
Watz, C. E.....St. Paul
Webber, F. L.....St. Paul

‡Weis, B. A.....St. Paul
Weisberg, Maurice.....St. Paul
‡Wenzel, G. P.....St. Paul
Werner, O. S.....Cambridge
Wheeler, M. W.....St. Paul
‡Whitacre, J. C.....St. Paul
Whitmore, F. W.....St. Paul
Williams, A. B.....St. Paul
Williams, C. K.....St. Paul
Williams, J. A.....St. Paul
‡Williamson, G. A.....St. Paul
‡Wilson, J. A.....St. Paul
Wilson, J. V.....St. Paul
Winnick, J. B.....St. Paul
Wold, K. C.....St. Paul
‡Wolfe, H. H.....St. Paul
Wolff, H. J.....St. Paul
‡Wolkoff, H. J.....St. Paul
Youngren, E. R.....St. Paul
‡Zachman, L. L.....St. Paul
Zimmermann, H. B.....St. Paul

RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Mahnomen, Marshall, Norman, Pennington, Polk, Red Lake and Roseau Counties
Regular meetings, Second Tuesday, April, September and December
Annual meeting, December
Number of Members: 57

President
Holmstrom, C. H.....Warren

Secretary
Oppegaard, C. L.....Crookston

Adkins, C. D.....Minneapolis
Adkins, C. M.....Thief River Falls
‡Anderson, W. E.....Thief River Falls
Anderson, W. S.....Minneapolis
Behr, O. K.....Crookston
Berge, D. O.....Roseau
Berlin, A. S.....Hallock
Bertelson, O. L.....Crookston
Biedermann, Jacob...Thief River Falls
‡Boardman, D. V.....Twin Valley
Bratrud, Edward.....Thief River Falls
Brink, A. A.....Baudette
Brown, L. L.....Crookston
Cameron, J. H.....Erskine
Carlson, A. E.....Warren
‡Delmore, J. L., Jr.....Roseau
Delmore, J. L., Sr.....Roseau
‡Derifield, R. S.....Crookston
Ederer, J. J.....Mahnomen
Erickson, Eskil.....Halstad
Griffin, P. J.....Fertile
‡Hackie, E. A.....Hallock
Hedemark, H. H.....Thief River Falls
Helseth, H. K.....Thief River Falls
Henney, W. H.....McIntosh
Hollands, W. H.....Fisher
Holmstrom, C. H.....Warren
Kirk, G. P.....East Grand Forks
‡Knutson, G. A.....Greenbush
Kostick, W. R.....Fertile
Leitch, N. M.....Warroad
Loken, Theodore.....Ada
Lynde, O. G.....Thief River Falls
Mellby, O. F.....Thief River Falls
Mercil, W. F.....Crookston
Morley, G. A.....Crookston
Nelson, H. E.....Crookston
Norman, J. F.....Crookston
Oppegaard, C. L.....Crookston
Oppegaard, M. O.....Crookston
*Paradis, W. G.....Crookston
Parsons, J. G.....Crookston
Pearson, L. O.....Warroad
Petkevich, F. M.....Red Lake Falls
Reff, A. R.....Crookston
‡Rice, H. R.....Roseau
Sather, Allen.....Fosston
‡Sather, G. A.....Fosston
‡Sather, R. N.....McIntosh
‡Sather, R. O.....Crookston
Shaleen, A. W.....Hallock
Shedlov, Abraham.....Fosston
Starekow, M. D.....Thief River Falls
Stevens, John.....Gonvick
Stocking, F. F.....Hallock
‡Teisberg, J. E.....Middle River
Torgerson, W. B.....Oklee
Uhley, C. G.....Crookston

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings, quarterly
Annual meeting, May
Number of Members: 31

President
Gibbons, F. C.....Comfrey

Secretary
Fesenmaier, O. B.....New Ulm

‡Abbott, C. B.....Springfield
‡Anderson, E. M.....Lamberton
‡Benton, P. C.....Gibbon
Cairns, R. J.....Redwood Falls
Dubbe, F. H.....New Ulm
‡Dysterheft, A. F.....Gaylord
Eaves, G. B.....Wabasso
Esser, O. J.....New Ulm
Ferguson, W. C.....Walnut Grove
Fesenmaier, O. B.....New Ulm
Fritsche, Albert.....New Ulm
‡Fritsche, C. J.....New Ulm
Fritsche, T. R.....New Ulm
Gibbons, F. C.....Comfrey
Goblirsch, A. P.....Sleepy Eye
Hammermeister, T. F.....New Ulm
Hovde, Rolf.....Winthrop
Just, H. J.....Hastings
Kusske, A. L.....New Ulm
Nuessle, W. G.....Springfield
Penk, E. R.....Springfield
†Reineke, G. F.....New Ulm
Saffert, C. A.....New Ulm
Schroeppel, J. E.....Winthrop
Seifert, O. J.....New Ulm
‡Shima, G. J.....Sleepy Eye
‡Vogel, H. A. L.....New Ulm
Vogel, J. H.....New Ulm
‡Wahlberg, E. W.....Sleepy Eye
Weiser, G. B.....New Ulm
Wohlrabe, E. J.....Springfield

RENVILLE COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of each month
Annual meeting, November
Number of Members: 19

President
Fawcett, A. M.....Renville

Secretary
Erickson, R. E.....Hector

Adams, R. C.....Bird Island
Billings, R. E.....Franklin
Brand, W. A.....Redwood Falls
‡Ceplecha, S. F.....Redwood Falls
Cosgriff, J. A.....Olivia
Dordal, J.....Sacred Heart
Erickson, R. E.....Hector
Fawcett, A. M.....Renville
Flinn, T. E.....Redwood Falls
Gaines, E. C.....Buffalo Lake
‡Hartmann, C. M.....Fairfax
Johnson, H. E.....Bird Island
Johnson, O. H.....Redwood Falls
Johnson, W. E.....Morgan
‡Madland, R. S.....Fairfax
‡Mesker, G. H.....Olivia
Passer, A. A.....Olivia
Penhall, F. W.....Morton
‡Rinkey, Eugene.....Redwood Falls

RICE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, June
Number of Members: 30

President
Moses, Joseph, Jr.....Northfield

Secretary
Mears, R. F.....Northfield

Beede, Ethel R.....Faribault
Dungay, N. S.....Northfield
Engberg, E. J.....Faribault
Francis, D. W.....Morristown
Hanson, A. M.....Faribault
Hanson, J. W. .....Northfield
Huxley, F. R.....Faribault
Kennedy, G. L.....Faribault
Lexa, F. J.....Lonsdale
Lufkin, C. D.....Northfield
Lyght, C. E.....New York, N. Y.
McKeon, J. O.....Montgomery
Mears, R. F.....Northfield
Meyer, F. C.....Kenyon
Meyer, P. F.....Faribault
Moses, Joseph, Jr.....Northfield
Moses, R. R.....Kenyon
‡Nielsen, A. M.....Northfield
Nuetzman, A. W.....Faribault
Ould, C. L.....San Francisco, Calif.
Robilliard, C. M.....Faribault
Rohrer, C. A.....Waterville
‡Rumpf, C. W.....Faribault
†Rumpf, W. H.....Faribault
Stevenson, F. W.....Faribault
Studer, D. J.....Faribault
Traeger, C. A.....Faribault
Warren, F. S.....Washington, D. C.
Weaver, P. H.....Faribault
Wilson, Warren.....Northfield

ST. LOUIS COUNTY MEDICAL SOCIETY

Carlton, Cook, Itasca, Lake and St. Louis Counties
Regular meetings, second Thursday every month except July and August
Annual meeting, December
Number of Members: 249

President
Hatch, W. E.....Duluth

Secretary
Buckley, R. P.....Duluth

Abraham, A. L.....Duluth
Adams, B. S.....Hibbing
‡Addy, E. R.....Gilbert
‡Ahl, C. W.....Hibbing
Akins, W. M.....Eveleth
Albrecht, H. H.....Floodwood
Anderson, H. R.....Deer River
‡Anderson, C. L.....Duluth
‡Arko, J. L.....Hibbing
Armstrong, E. L.....Duluth
Athens, A. G.....Duluth
†Ayres, G. T.....Ely

Bachnik, F. W.....Hibbing
Backus, R. W.....Nopeming
Baich, V. M.....Bovey
‡Bagley, C. M.....Duluth
Bagley, Elizabeth C.....Duluth
Bagley, W. R.....Duluth
‡Bakkila, Henry .....Duluth
Bardon, Richard.....Duluth
Barney, L. A.....Duluth
‡Barrett, E. E.....Duluth
‡Batty, J. L.....Duluth
‡Becker, F. T.....Duluth
Bender, J. H.....Big Fork
Bepko, Marie K.....Cloquet
Berdez, G. L.....Duluth
Bianco, A. J.....Duluth
Binet, H. E.....Grand Rapids
Blakely, C. C.....Barnum
Blumgren, J. E.....Duluth
Boman, P. G.....Duluth
Bowen, R. L.....Hibbing
‡Boyer, S. H., Jr.....Duluth
Boyer, S. H., Sr.....Duluth
Braun, O. C.....Nashwauk
‡Braverman, N. J.....Duluth
‡Bray, P. N.....Duluth
Bray, R. B.....Biwabik
Buckley, R. P.....Duluth
Butler, J. K.....Carlton

Cantwell, W. F.....International Falls
Carstens, C. F.....Hibbing
Chapman, T. L.....Duluth
Chermak, F. G.....International Falls
‡Christenson, C. H.....Duluth
Christensen, E. P.....Two Harbors
‡Clapp, Stewart.....Duluth
Clark, F. F.....Duluth
‡Cleaves, W. D.....Grand Rapids
‡Clegg, R. S.....Duluth
Collins, A. N.....Duluth
†Collins, H. C.....Duluth
Coventry, W. A.....Duluth
‡Coventry, W. D.....Duluth
‡Cunningham, C. B.....Virginia

Davies, R. J.....Nopeming
Dickson, F. H., Jr.....Proctor
Dittrich, R. J.....Duluth
Doolittle, L. E.....Duluth
‡Doyle, G. C.....Duluth
Eckman, P. F.....Duluth
Eckman, R. J.....Duluth
Ekblad, J. W.....Duluth
Elias, F. J.....Duluth
Emanuel, K. W.....Duluth
Eppard, R. M.....Cloquet
Erskine, G. M.....Grand Rapids
Estrem, T. A.....Hibbing
Ewens, H. B.....Virginia

Fankhoner, A. V.....Buhl
Fawcett, K. R.....Duluth
‡Fellows, M. F.....Duluth
‡Feuling, J. C.....Bovey
Fischer, M. McC.....Duluth
‡Fisketti, Henry.....Duluth
Forbes, R. S.....Duluth
Gendron, J. F.....Grand Rapids
Gillespie, M. G.....Duluth
Goldish, D. R.....Duluth
Goodman, C. E.....Virginia
‡Gowan, L. R.....Duluth
‡Grabow, J. J.....Duluth
Graham, A. W.....Chisholm
Grahek, J. P.....Ely
Grangaard, H. O.....Proctor
‡Graves, W. N.....Duluth
Guldseth, G. J.....Duluth

Hammar, L. M.....Two Harbors
Haney, C. L.....Duluth
Hanson, E. O.....Cloquet
‡Harlowe, H. D.....Virginia
‡Harri, E. J.....Carlton
Harris, C. N.....Hibbing
Hatch, W. E.....Duluth
‡Hathaway, S. J.....Proctor
Hayes, M. F.....Nashwauk
Hedberg, G. A.....Nopeming
Heiam, W. C.....Cook
Hilding, A. C.....Duluth
Hill, F. E.....Duluth
Hirschboeck, F. J.....Duluth
*Hirschfield, M. S.....Duluth
Hoff, H. O.....Duluth
‡Honke, R. W.....Proctor
Houkom, S. S.....Duluth
Hursh, M. M.....Hibbing
Hutchinson, Henry.....Moose Lake

Jacobson, Clarence.....Chisholm
Jensen, T. J.....Duluth
Jessico, C. M.....Duluth
‡Johnson, K. E.....Duluth
Johnsrud, L. W.....Chisholm
Jolin, F. M.....Bovey
Jolin, R. V.....Grand Rapids

‡Kelly, A. C.....Duluth
Kemp, M. W.....Moose Lake
Kiesling, I. H.....Coleraine
Kingsbury, E. M.....Moose Lake
Klein, Harry.....Duluth
Knapp, F. N.....Duluth
Kohlbry, C. O.....Duluth
Kotchevar, F. R.....Eveleth
‡Kozberg, Oscar.....Moose Lake
†Kraft, Peter .....Duluth
Krueger, V. R.....Nopeming

‡La Bree, R. H.....Duluth
Laikola, L. A.....Soudan
Laird, A. T.....Duluth
Lenont, C. B.....Virginia
Lepak, F. J.....Duluth
Litman, S. N.....Duluth
Loofbourrow, E. H.....Keewatin

Macfarlane, P. H.....Chisholm
‡MacRae, G. C.....Duluth
Magney, F. H.....Duluth
Malmstrom, J. A.....Virginia
Manley, J. R.....Duluth
†Marcley, W. J.....Minneapolis
‡Martin, W. C.....Duluth
‡Mayne, R. M.....Duluth
McCarty, P. D.....Ely
†McCoy, Mary K.....Duluth
McDonald, A. L.....Duluth
McHaffie, O. L.....Duluth
McKenna, M. J.....Grand Rapids
McLeod, J. L.....Grand Rapids
McNutt, J. R.....Duluth
‡Mead, C. H.....Duluth
Merriman, L. L.....Duluth
‡Meyer, J. O.....Grand Rapids
‡Minkler, J. E.....Virginia
Minty, Earl W.....Duluth
Moe, R. J.....Duluth
Moe, Thomas.....Moose Lake
‡Mollers, T. P.....Mountain Iron
Monroe, P. B.....Cloquet
‡Monserud, N. O.....Cloquet
More, C. W.....Eveleth
Morsman, L. W.....Hibbing
Mueller, R. F.....Two Harbors
Mueller, Selma C.....Duluth
Neff, W. S.....Virginia
Nelson, E. H.....Chisholm
‡Nelson, L. S.....Hibbing
‡Nelson, R. L.....Duluth
Nicholson, M. A.....Duluth
Norberg, C. E.....Cloquet
Nutting, R. E.....Duluth

Olson A. E.....Duluth
Olson, A. O.....Duluth

Palmer, H. A.....Black Duck
†Parker, O. W.....Ely
‡Parson, E. I.....Duluth
Parker, W. H.....Chisholm
Pasek, A. W.....Cloquet
‡Patch, O. B.....Duluth
‡Patterson, S. A.....Duluth
Pearsall, R. P.....Virginia
‡Pedersen, R. C.....Duluth
Pennie, D. F.....Duluth
Peterson, E. N.....Virginia
‡Peterson, J. H.....Duluth
Pfuetze, K. H.....Cannon Falls
Plowman, E. T.....Marble
Power, J. E.....Duluth
Puumala, R. H.....Cloquet

Raadquist, C. S.....Hibbing
Rademaker, William .....Ely
Raihala, John.....Virginia
Raiter, R. F.....Cloquet
†Robinson, J. M.....Corning, N. Y.
Rokala, H. E.....Virginia
Rood, D. C.....Duluth
‡Rosenfield, A. B.....Hibbing
Rowe, O. W.....Duluth
Rowles, E. K.....Coleraine
‡Rudie, P. S.....Duluth
Ryan, W. J.....Duluth

‡Sach-Rowitz, Alvan.....Moose Lake
Salter, R. A.....Virginia
Sarff, O. E.....Virginia
Sax, S. G.....Duluth
Scherer, C. A.....Duluth
Schroder, C. H.....Duluth
‡Schweiger, T. R.....Hibbing
‡Seashore, R. T.....Duluth
Shapiro, E. Z.....Duluth
Shastid, T. H.....Duluth
Shaw, A. W.....Virginia
Sher, D. A.....Virginia
Siegel, J. S.....Virginia
Sinamark, Andrew.....Hibbing
Sisler, C. E.....Grand Rapids
Smith, C. M.....Duluth
Smith, W. R.....Grand Marais
‡Snyker, O. E.....Ely
Spang, A. J.....Duluth
Spang, J. S.....Duluth
Spicer, F. W.....Duluth
Spurbeck, R. G.....Cloquet
Strathern, M. L.....Gilbert
‡Stewart, D. E.....Grand Rapids
Strobel, W. G.....Duluth
Stuart, A. B.....Cloquet
Sutherland, H. N.....Ely
Sutton, Janet B.....Grand Rapids
‡Swanson, P. E.....Virginia
Swedberg, W. A.....Duluth
‡Swenson, A. O.....Duluth

Taylor, C. W.....Duluth
Terrell, B. J.....Nopeming
‡Tibbetts, M. H.....Duluth
Tilderquist, D. L.....Duluth
Tingdale, Carlyle.....Hibbing
‡Trytten, E. G.....Middle River
‡Tudor, R. B.....Hibbing
Tuohy, E. L.....Duluth

‡Urberg, S. E.....Duluth

‡Van Valkenberg, J. D.....Floodwood
Vercellini, C. E.....Duluth

†Walker, A. E.....Duluth
Wallace, M. O.....Duluth
*Webber, E. E.....Duluth
Wells, A. H.....Duluth
‡Wheeler, D. W.....Duluth
‡Williams, J. A.....Hibbing
Winter, J. A.....Duluth

Young, B. B.....Duluth
Young, T. O.....Duluth

Zemen, E. W.....Hibbing
Zlatovski, M. L.....Duluth

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of the alternate months
Annual meeting, June
Number of Members: 33

President
Kucera, S. T.....Lonsdale

Secretary
Schimelpfenig, G. T.....Chaska

‡Bodaski, A. A.....Montgomery
Buck, F. H.....Shakopee
Cervenka, C. F.....New Prague
‡Dworak, A. F.....St. Paul
Emmerson, W. S.....Mayer
Havel, H. W.....Jordan
Hebeisen, M. B.....Chaska
Juergens, H. M.....Belle Plaine
‡Klein, J. C.....Shakopee
Kortsch, F. P.....Prior Lake
‡Krieser, A. E.....Boyd
‡Kucera, L. J.....Lonsdale
Kucera, S. T.....Lonsdale
Maertz, W. F.....New Prague
Malerich, J. A.....St. Paul
Martin, T. P.....Arlington
Nagel, H. D.....Waconia
‡Nelson, K. L.....Montgomery
Ninneman, N. N.....Waconia
Novak, E. E.....New Prague
‡Olson, C. J.....Belle Plaine
Pearson, B. F.....Shakopee
Phillips, W. H.....Jordan
Pogue, R. E.....Watertown
‡Ponterio, J. E.....Shakopee
†Reiter, H. W.....Shakopee
Schimelpfenig, G. T.....Chaska
†Shrader, J. S.....Springfield
Simons, B. H.....Chaska
†Westerman, A. E.....Montgomery
Westerman, F. C.....Montgomery
‡Wiechman, F. H.....Montgomery
Wunder, H. E.....Shakopee

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Cottonwood, Jackson, Murray, Nobles, Pipestone and Rock Counties
Regular meetings, March and October.
Annual meeting, October
Number of Members: 61

President
Stratte, H. C. ..... Windom

Secretary
Mork, B. O., Jr. ..... Worthington

Anderson, O. W. ..... Luverne
Arnold, E. W. ..... Adrian
‡Balmer, A. I. ..... Pipestone
Basinger, H. P. ..... Windom
Basinger, H. R. ..... Mountain Lake
‡Beckering, Gerrit ..... Edgerton
Benjamin, W. G. ..... Pipestone
Bofenkamp, F. W. ..... Luverne
Brown, A. H. ..... Pipestone
Carlson, J. V. ..... Westbrook
†Chadbourn, A. G. ..... Heron Lake
‡Chunn, S. S. ..... Pipestone
DeBoer, Hermanus ..... Edgerton
‡Doman, V. W. ..... Lakefield
Doms, H. C. A. ..... Slayton
*Engh, Sigfred ..... Jackson
Hallin, R. P. ..... Worthington
Halloran, W. H. ..... Jackson
Halpern, D. J. ..... Brewster
Harrison, P. W. ..... Worthington
‡Hebhel, Robert ..... Minneapolis
Heiberg, O. M. ..... Worthington
Hitchings, W. S. ..... Lakefield
‡Hoyer, L. J. ..... Windom
Johnson, R. E. ..... Crookston
Johnston, L. F. ..... Slayton
Kilbride, E. A. ..... Worthington
Larson, J. T. ..... Lake Wilson
Lohmann, J. G. ..... Jasper
†Maitland, D. P. ..... Jackson
Maitland, E. T. ..... Jackson
‡Manson, F. M. ..... Worthington
McLane, Evelyn G. ..... Jackson
Mork, B. O., Jr. ..... Worthington
Mork, B. O., Sr. ..... Worthington
Nealy, D. E. ..... Adrian
‡Pankratz, P. J. ..... Mountain Lake
Pierson R. F. ..... Slayton
Piper, W. A. ..... Mountain Lake
Rogers, C. W. ..... Heron Lake
Rose, J. T. ..... Lakefield
Schade, F. L. ..... Worthington
Schutz, E. S. ..... Mountain Lake
‡Schmidt, W. R. ..... Worthington
Sether, A. F. ..... Ruthton
Sherman, C. L. ..... Luverne
‡Sjostrom, L. E. ..... Storden
Slater, S. A. ..... Worthington
‡Smith, G. G. ..... Fulda
Sogge, L. L. ..... Windom
Sorum, F. T. ..... Jasper
Stanley, C. R. ..... Worthington
Stevenson, B. M. ..... Fulda
Stratte, H. C. ..... Windom
‡Taylor, E. S. ..... Worthington
Tofte, Josephine ..... Minneapolis
Waller, J. D. ..... Wilmont
‡Wells, W. B. ..... Jackson
Williams, C. A. ..... Pipestone
Williams, L. A. ..... Slayton
‡Wilson, I. H. ..... Worthington
†Wright, C. O. ..... Luverne

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Regular meetings, third Thursday of the month
Annual meeting, third Thursday of Decemher
Number of Members: 53

President
Engstrom, G. F. ..... Belgrade

Secretary
Libert, J. N. ..... St. Cloud

Barnett, J. M. ..... Cold Spring
Baumgartner, F. H. ..... Albany
Beuning, J. B. ..... St. Cloud
Brigham, C. F. ..... St. Cloud
Buscher, J. C. ..... St. Cloud
Clark, H. B. ..... St. Cloud
Donaldson, C. S. ..... Foley
DuBois, J. F. ..... Sauk Center
Engstrom, G. F. ..... Belgrade
Evans, L. M. ..... Sauk Rapids
Fleming, T. N. ..... St. Cloud
Freeman, W. L. ..... St. Cloud
Friesleben, William ..... Sauk Rapids
Gaida, J. B. ..... St. Cloud
‡Goehrs, G. H. ..... St. Cloud
Goehrs, H. W. ..... St. Cloud
Haberman, Emil ..... Osakis
Halenbeck, P. L. ..... St. Cloud
†Hemstead, Werner ..... Fergus Falls
Henry, C. J. ..... Milaca
Jones, R. N. ..... St. Cloud
Keithahn, E. E. ..... Sleepy Eye
‡Kern, M. C. ..... Freeport
‡Kettlewell, R. B. ..... Sauk Center
Kohler, D. W. ..... St. Joseph
Koop, S. H. ..... Richmond
*Kuhlmann, August ..... Melrose
Lewis, C. B. ..... St. Cloud
Libert, J. N. ..... St. Cloud
Mahowald, A. ..... Albany
‡Mattson, A. D. ..... Milaca
McDowell, J. P. ..... St. Cloud
Meyer, A. A. ..... Melrose
‡Moos, D. J. ..... Minneapolis
‡Musachio, N. F. ..... Foley
Myre, C. R. ..... Paynesville
Nessa, C. B. ..... St. Cloud
Raetz, S. J. ..... Maple Lake
Rathbun, C. A. ..... St. Cloud
Richards, W. B. ..... St. Cloud
Ryan, J. D. ..... Milaca
Sandven, N. O. ..... Paynesville
Schatz, F. J. ..... St. Cloud
Schmitz, E. J. ..... Holdingford
Sherwood, G. E. ..... Kimball
Stangl, P. E. ..... St. Cloud
‡Stewart, N. E.
Fort Leonard Wood, Mo.
‡Street, Bernard ..... St. Cloud
*Sutton, C. S. ..... St. Cloud
Townsend, De Wayne
Philadelphia, Pa.
Veranth, L. A. ..... St. Cloud
Walfred, K. A. ..... St. Cloud
‡Watson, W. J. ..... Holdingford
Wenner, W. T. ..... St. Cloud
Zachman, A. H. ..... Melrose

STEELE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, December
Number of Members: 15

President
McIntyre, J. A. ..... Owatonna

Secretary
Dewey, D. H. ..... Owatonna

‡Berghs, L. V. ..... Owatonna
Dewey, D. H. ..... Owatonna
Ertel, E. Q. ..... Ellendale
Hartung, E. H. ..... Claremont
Kurtin, H. J. ..... Blooming Prairie
‡McEnaney, C. T. ..... Owatonna
McIntyre, J. A. ..... Owatonna
Melby, Benedik ..... Blooming Prairie
Morehead, D. E. ..... Owatonna
Nelson, E. J. ..... Owatonna
‡Roberts, O. W. ..... Owatonna
Schaefer, J. F. ..... Owatonna
Senn, E. W. ..... Owatonna
*Stewart, A. B. ..... Owatonna
‡Stransky, T. W. ..... Owatonna
Wilkowske, R. J. ..... Owatonna

UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Beltrami, Cass, Clearwater, Crow Wing, Hubbard
Koochiching, Lake of the Woods, Morrison, Todd and Wadena Counties
Regular meetings, Spring, Summer, Fall, Winter
Annual meeting, January
Number of Members: 101

President
McCann, D. F. ..... Bemidji

Secretary
Badeaux, G. I. ..... Brainerd

Adkins G. H. ..... Pine River
Badeaux, G. I. ..... Brainerd
Beise, R. A. ..... Brainerd
Borgerson, A. H. ..... Long Prairie
Bosland, H. G. ..... Verndale
‡Bray, K. E. ..... Park Rapids
‡Cardle, G. E. ..... Brainerd
Carlson, C. E. ..... Aitkin
†Christie, G. R. ..... Long Prairie
Christie, R. L. ..... Long Prairie
Cook, J. M. ..... Staples
‡Coombs, C. H. ..... Cass Lake
†Corrigan, J. E. ..... Spooner
Craig, C. C. ..... International Falls
Crow, E. R. ..... Ah-Gwah-Ching
Darius, D. J. ..... Cass Lake
‡Davis, L. F. ..... Wadena
Davis, L. T. ..... Wadena
Davis, R. D. ..... Clearbrook
Davis, T. C. ..... Wadena
‡East, John ..... Northome
Eiler, John ..... Park Rapids
Eyres, T. E. ..... Pequot
‡Fait, R. V. ..... Little Falls
Fitzsimons, W. E. ..... Brainerd
Frost, H. T. ..... Wadena
Garlock, A. V. ..... Bemidji
Garlock, D. H. ..... Bemidji
Gerber, M. P. ..... Brainerd
Ghostley, Mary C. ..... Puposky
‡Gifford, B. L. ..... Long Prairie
†Gilmore, Rowland ..... Bemidji
Gorenflo, Leila ..... Ah-Gwah-Ching
Grogan, J. S. ..... Wadena
Groschupf, T. P. ..... Bemidji
Grose, F. N. ..... Clarissa
Halladay, G. J. ..... Brainerd
**Haller, William ..... Bemidji
Hanover, R. D. ..... Littlefork
Hawkinson, J. P. ..... Croshy
Healy, R. T. ..... Pierz
Higgs, W. W. ..... Park Rapids
House, Z. E. ..... Cass Lake
‡Houston, D. M. ..... Park Rapids
Hubbard, O. E. ..... Brainerd
Huhin, E. G. ..... Deerwood
‡Idstrom, L. G. ..... Minneapolis
Jamieson, E. F. ..... Brainerd
†Johnson, C. E. ..... Pine River
Johnson, D. L. ..... Little Falls
Johnson, E. W. ..... Bemidji
Johnson, S. M. ..... Ah-Gwah-Ching
Knight, E. G. ..... Swanville
‡Knights, J. A. ..... Bemidji
‡Koskela, L. E. ..... Sebeka
Lamb, H. L. ..... Little Falls
Larson, L. J. ..... Bagley
Lee, H. W. ..... Brainerd
Leemhuis, G. H. ..... Aitkin
Lenarz, A. J. ..... Browerville
Lund, W. J. ..... Staples
‡Mark, Hilbert ..... Minneapolis
‡Mason, J. A. ..... International Falls
McCann, D. F. ..... Bemidji
Mitby, I. L. ..... Aitkin
Monahan, R. H. ..... International Falls
Mosby, M. E. ..... Long Prairie
‡Mulligan, A. M. ..... Brainerd
‡Murray, R. A. ..... Aitkin
Nelson, N. P. ..... Brainerd
Nolan, D. E. ..... Dayton, Ohio
‡O'Leary, J. H. ..... Staples
Petraborg, H. T. ..... Aitkin
Pierce, C. H. ..... Wadena
‡Potek, David ..... International Falls
Quanstrom, V. E. ..... Brainerd
‡Ratcliffe, J. J. ..... Aitkin
Reichelderfer, C. F. ..... Staples
Ringle, O. F. ..... Walker

**Died in Service.

‡Schulze, W. M.....Swanville
Shannon, S. S.....Ironton
Silver, Henry.....Sebeka
Simons, E. J.....Swanville
‡Simons, S. J.....Akeley
Smith, B. A.....Crosby
‡Stafford, C. E.....Baudette
Stein, R. J.....Pierz
‡Swedenburg, P. A.....Swanville
Thabes, J. A., Jr.....Brainerd
Thabes, J. A., Sr.....Brainerd
Trommald, Gladys B. K...Minneapolis
‡Vandersluis, C. W.....Bemidji
Watson, A. M.....Royalton
†Watson, J. D.....Minneapolis
Watson, P. T.....Bemidji
‡Watson, S. W.....Royalton
Whittemore, D. D.....Bemidji
Will, C. B.....Bertha
Will, W. W.....Bertha
Wilson, V. O.....Minneapolis
‡Wingquist, C. G.....Crosby
Withrow, M. E.....International Falls

WABASHA COUNTY MEDICAL SOCIETY

Regular meetings, Spring and Fall
Annual meeting, first Thursday after first Monday in October
Number of Members: 15

President
Bayley, E. C.....Lake City
Secretary
Wilson, W. F.....Lake City

Bayley, E. C.....Lake City
Bouquet, B. J.....Wabasha
‡Bowers, R. N.....Lake City
†Cochrane, W. J.....Lake City
Collins, J. S.....Wabasha
†Dempsey, D. P.....Kellogg
Ellis, E. W.....Elgin
‡Flesche, B. A.....Lake City
Glabe, R. A.....Plainview
‡Holt, G. W.....Wabasha
Mahle, D. G.....Plainview
Ochsner, C. G.....Wabasha
Replogle, W. H.....Wabasha
‡Wellman, T. G.....Lake City
†Wilson, W. F.....Lake City

WASECA COUNTY MEDICAL SOCIETY

Regular meetings, January and July
Annual meeting, January
Number of Members: 8

President
Wadd, C. T.....Janesville
Secretary
Oeljen, S. C. G.....Waseca

Gallagher, B. J.....Waseca
‡Hottinger, R. C.....Janesville
McIntire, H. M.....Waseca
Oeljen, S. C. G.....Waseca
‡Olds, G. H.....Waseca
‡Spittler, R. O.....New Richland
Swenson, O. J.....Waseca
Wadd, C. T.....Janesville

WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday in each month
Annual meeting second Tuesday in December
Number of Members: 18

President
Johnson, R. G.....Stillwater
Secretary
Boleyn, E. S.....Stillwater

Boleyn, E. S.....Stillwater
‡Carlson, R. E.....Stillwater
Haines, J. H.....Stillwater
Holcomb, J. T....Marine-on-St. Croix
Humphrey, W. R.....Stillwater
Johnson, R. G.....Stillwater
Josewski, R. J.....Stillwater
Kalinoff, D.....Stillwater
McCarten, F. M.....Stillwater
Mingo, F. E.....Hugo
‡Moir, W. W.....Stillwater
Poirier, J. A.....Forest Lake
‡Ruggles, G. McC.....Forest Lake
‡Samson, E. R.....Stillwater
Sherman, C. H.....Stillwater
*Strand, E. V.....Bayport
Stuhr, J. W.....Stillwater
Van Meier, Henry.....Stillwater
Wilkinson, Stella L.....Moose Lake

WATONWAN COUNTY MEDICAL SOCIETY

Regular meeting, at call
Annual meeting, December
Number of Members: 6

President
Bratrude, E. J.....St. James
Secretary
Grimes, H. B.....Madelia

Bergman, O. B.....St. James
Bratrude, E. J.....St. James
Bregel, F. L.....St. James
Grimes, H. B.....Madelia
Hagen, O. E.....Butterfield
McCarthy, W. J.....Madelia
*Thompson, Albert.....St. James

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Pope, Stevens, and Traverse Counties
Regular meetings, second Wednesday, March, May, September and November
Annual meeting, September
Number of Members: 28

President
Rydburg, W. C.....Brooten
Secretary
Linde, Herman.....Cyrus

Arneson, A. I.....Morris
Bates, B. V.....Browns Valley
Behmler, F. W.....Morris
Bergan, Otto.....Clinton
Bolsta, Charles.....Ortonville
*Caine, C. E.....Morris
‡Dahle, M. B.....Glenwood
Doleman, N. F.....Tintah
Eberlin, E. A.....Glenwood
Elsey, E. McC.....Glenwood
Elsey, J. R.....Glenwood
Ewing, C. F.....Wheaton
Fitzgerald, E. T.....Morris
‡Garrow, D. M.....St. Paul
‡Giesen, A. F.....Starbuck
Karn, B. R.....Ortonville
Lindberg, A. L.....Wheaton
Linde, Herman.....Cyrus
Magnusen, A. E.....Wheaton
‡Merrill, Robert.....Morris
McIver, B. A.....Lowry
Mooney, L. P.....Graceville
‡Muir, W. F.....Graceville
O'Donnell, D. M.....Ortonville
Oliver, C. I.....Graceville
Oliver,, I. L.....Graceville
Ransom, M. L.....Hancock
Rydburg, W. C.....Brooten

WINONA COUNTY MEDICAL SOCIETY

Regular meetings, first Monday in January, April, July, October
Annual meeting, first Monday in January
Number of Members: 27

President
Bruder, V. F. J.....Winona
Secretary
Meinert, A. E.....Winona

Benoit, F. T.....Winona
Bruder, V. F. J.....Winona
Christensen, E. E.....Winona
‡Hamlon, J. S.....St. Charles
Heise, Herbert .....Winona
Heise, W. F. C.....Winona
Heise, W. V.....Winona
Keyes, J. D.....Winona
Loomis, G. L.....Winona
‡Lundquist, C. W.....Winona
‡Mattison, P. A.....Winona
McLaughlin, E. M.....Winona
Meinert, A. E.....Winona
‡Meyer, W. M.....Winona
‡Nauth, B. S.....Winona
Neumann, C. A.....Winona
Page, R. L.....St. Charles
Robbins, C. P.....Winona
‡Roemer, H. J.....Winona
‡Roth, F. D.....Lewiston
Satterlee, H. W.....Lewiston
Schaefer, Samuel.....Winona
Steiner, I. W.....Winona
Tweedy, G. J.....Winona
Tweedy, R. B.....Winona
*Walker, G. H.....Winona
Wilson, R. H.....Winona
‡Younger, L. I.....Winona

WRIGHT COUNTY MEDICAL SOCIETY

Regular meetings, quarterly
Annual meeting, second Monday in October
Number of Members: 19

President
Rolig, D. H.....Howard Lake
Secretary
Catlin, J. J.....Buffalo

‡Anderson, W. P.....Buffalo
Bendix, L. H.....Annandale
Catlin, J. J.....Buffalo
Catlin, T. J.....Buffalo
Ellison, F. E.....Monticello
Greenfield, W. T.....Delano
Grundset, O. J.....Montrose
‡Guilfoile, P. J.....Delano
Harriman, L.....Howard Lake
‡Hart, W. E.....Monticello
Lee, J. L.....Alexandria
Peterson, O. L.....Cokato
Phillips, A. E.....Delano
Ridgway, A. M.....Annandale
Roholt, C. L.....Waverly
Rolig, D. H.....Howard Lake
Swezey, B. F.....Buffalo
Thielen, R. D.....St. Michael
Thompson, Arthur.....Cokato

ALPHABETIC ROSTER

Key to Symbols: *Deceased; †Affiliate or Associate; ‡In Service

Aagaard, G. N., Jr.....Minneapolis
Aanes, A. M.....Red Wing
‡Abbott, C. B.....Springfield
Abbott, J. S.....St. Paul
†Aborn, W. H.....Hawley
Abraham, A. L.....Duluth
Abramson, Milton.....Minneapolis
‡Adair, A. F., Jr.....St. Paul
Adams, B. S.....Hibbing
Adams, R. C.....Bird Island
Adams, R. C.....Rochester
‡Addy, E. R.....Gilbert
Adkins, C. D.....Minneapolis
Adkins, C. M.....Thief River Falls
Adkins, G. H.....Pine River
Adson, A. W.....Rochester
Affeldt, D. E.....Kasson
‡Ahl, C. W.....Hibbing
Ahlfs, J. J.....Caledonia
Ahrens, A. E.....St. Paul
Ahrens, A. H.....St. Paul
Aita, J. A.....Dubuque, Iowa
Aitkens, H. B.....Le Center
Akins, W. M.....Eveleth
Albers, G. D.....Rochester
Alberts, M. W.....St. Paul
Albrecht, H. H.....Floodwood
Alden, J. F.....St. Paul
†Alexander, F. H.....St. Paul
‡Alexander, H. A.....Minneapolis
‡Aling, C. A.....Minneapolis
Aling, C. P.....Minneapolis
Allen, C. C.....Austin
‡Allen, E. V. N.....Rochester
Allen, H. W.....Minneapolis
Allen, H. B.....Austin
Allison, R. G.....Minneapolis
Altnow, H. O.....Minneapolis
Alvarez, W. C.....Rochester
Amberg, Samuel.....Rochester
‡Ambrusko, J. S.....Rochester
Andersen, A. G.....Minneapolis
Andersen, S. C.....Minneapolis
‡Anderson, C. D.....Rochester
‡Anderson, C. L.....Duluth
Anderson, D. D.....Minneapolis
‡Anderson, D. P., Jr.....Austin
‡Anderson, E. D.....Minneapolis
‡Anderson, Earl M.....Rochester
‡Anderson, Edward M.....Lamberton
Anderson, E. R.....Minneapolis
Anderson, F. J.....Minneapolis
Anderson, H. A.....Rochester
Anderson, H. R.....Deer River
Anderson, J. K.....Minneapolis
Anderson, K. W.....Minneapolis
Anderson, L. E.....Rochester
Anderson, M. J.....Rochester
‡Anderson, N. E.....Harmony
Anderson, O. W.....Luverne
Anderson, P. A.....Minneapolis
Anderson, R. E.....Willmar
Anderson, S. H.....Red Wing
‡Anderson, U. S.....Minneapolis
‡Anderson, W. E.....Thief River Falls
‡Anderson, W. P.....Buffalo
Anderson, W. S.....Minneapolis
‡Andreassen, E. C.....Minneapolis
Andresen, K. D.....Minneapolis
Andrews, R. N.....Mankato
Andrews, R. S.....Minneapolis
Arends, A. L.....Cambridge
Arey, S. L.....Excelsior
‡Arko, J. L.....Chisholm
‡Arlander, C. E.....Minneapolis
Arling, L. S.....Minneapolis
‡Arling, P. A.....Minneapolis
Armstrong, E. L.....Duluth
†Armstrong, J. M.....St. Paul
Arndt, H. W.....Detroit Lakes
Arneson, A. I.....Morris
Arnold, Ann W.....Minneapolis
Arnold, D. C.....Minneapolis
Arnold, E. W.....Adrian
Arnquist, A. S.....St. Paul
Arnson, J. M.....Benson
‡Arny, F. P.....Preston
Arvidson, C. G.....Minneapolis
‡Arzt, P. K.....St. Paul
‡Ashburn, F. S.....Rochester
Athens, A. G.....Duluth
Atwater, J. S.....Rochester
Aune, Martin.....Minneapolis
Aurand, W. H.....Minneapolis
Aurelius, J. R.....St. Paul
Ausman, C. F.....St. Paul
†Ayres, G. T.....Ely

‡Babb, F. S.....Rochester
Bachnik, F. W.....Hibbing
Backus, R. W.....Nopeming
Bacon, D. K.....St. Paul
†Bacon, L. C.....St. Paul
Badeaux, G. I.....Brainerd
Baggenstoss, A. H.....Rochester
‡Bagley, C. M.....Duluth
Bagley, Elizabeth C.....Duluth
Bagley, W. R.....Duluth
Baich, V. M.....Bovey
Bailey, H. B.....Fairmont
‡Bailey, R. B.....Fairmont
Bair, H. L.....Rochester
Baken, M. P.....Minneapolis
Baker, A. B.....Minneapolis
Baker, A. C.....Fergus Falls
Baker, A. T.....Minneapolis
Baker, E. L.....Minneapolis
‡Baker, G. S.....Rochester
Baker, H. R.....Hayfield
Baker, Jeannette L.....Fergus Falls
Baker, Looe.....Minneapolis
Baker, N. H.....Fergus Falls
Baker, R. L.....Hayfield
Bakkila, H. E.....Duluth
‡Balcome, M. M.....St. Paul
‡Baldigo, E. M.....Red Wing
Balfour, D. C.....Rochester
‡Balkin, S. G.....Minneapolis
‡Balmer, A. I.....Pipestone
Banner, E. A.....Rochester
†Barber, J. P.....Minneapolis
Bardon, Richard.....Duluth
Bargen, J. A.....Rochester
Barker, N. W.....Rochester
Barnes, A. R.....Rochester
‡Barnes, R. G., Jr.....Hastings
Barnett, J. M.....Cold Spring
Barney, L. A.....Duluth
Barr, L. C.....Albert Lea
‡Barr, R. N.....St. Paul
Barr, W. H.....Wells
‡Barrett, E. E.....Duluth
Barron, Moses.....Minneapolis
Barry, L. W.....St. Paul
Barsness, Nellie O. N.....St. Paul
Basinger, H. P.....Windom
Basinger, H. R.....Mountain Lake
Bass, G. W.....Minneapolis
Bates, B. V.....Browns Valley
‡Batty, J. L.....Hibbing
Baumgartner, F. H.....Albany
Baxter, S. H.....Minneapolis
Bayard, H. F.....Minneapolis
Bayley, E. C.....Lake City
Beach, Northrop.....Minneapolis
Beals, Hugh.....St. Paul
†Beard, A. H.....Minneapolis
‡Beard, Crowell.....Rochester
Becker, Arnetta M.....Minneapolis
‡Becker, F. T.....Duluth
‡Beckering, Gerrit.....Edgerton
‡Beckjord, P. R.....Willmar
‡Beckman, W. G.....Minneapolis
Bedford, E. W.....Minneapolis
Beech, R. H.....St. Paul
Beede, Ethel R.....Farihault
‡Beek, H. O.....St. Paul
‡Beer, J. J.....St. Paul
Behmler, F. W.....Morris
Behr, O. K.....Crookston
Beise, R. A.....Brainerd
‡Beizer, L. H.....Rochester
Bell, C. C.....St. Paul
†Bell, E. T.....Minneapolis
Belote, G. B.....Caledonia
‡Belzer, M. S.....Minneapolis
Bender, J. H.....Big Fork
Bendix, L. H.....Annandale
Benedict, W. L.....Rochester
Benepe, J. L.....St. Paul
Benesh, L. A.....Minneapolis
Benesh, N. G.....Minneapolis
Benjamin, A. E.....Minneapolis
‡Benjamin, E. G.....Minneapolis
‡Benjamin, H. G.....Minneapolis
Benjamin, W. G.....Pipestone
Benn, F. G.....Minneapolis
Bennett, J. G.....Rochester
‡Bennett, J. K.....Rochester
Bennett, W. A.....Rochester
Bennion, P. H.....St. Paul
Benoit, F. T.....Winona
Benson, A. I.....Rochester
Benson, R. E.....Rochester
Bentley, N. P.....St. Paul
‡Benton, P. C.....Gibbon
Bepko, Marie K.....Cloquet
Berdez, G. L.....Duluth
Bergan, Otto.....Clinton
Berge, D. O.....Roseau
Bergen, C. T.....Bricelyn
Berger, A. G.....Minneapolis
‡Bergh, G. S.....Minneapolis
Bergh, L. N.....Montevideo
‡Berghs, L. V.....Owatonna
Bergman, O. B.....St. James
Bergquist, K. E.....Battle Lake
Berkman, D. M.....Rochester
Berkman, J. M.....Rochester
‡Berkwitz, N. J.....Minneapolis
Berlin, A. S.....Hallock
‡Berman, Reuben.....Minneapolis
Bernstein, W. C.....St. Paul
Bertelson, O. L.....Crookston
Bessesen, A. N., Jr.....Minneapolis
‡Bessesen, D. H.....Minneapolis
Bessesen, W. A.....Minneapolis
Beuning, J. B.....St. Cloud
Bianco, A. J.....Duluth
Bianco, J. J.....Rochester
Bicek, J. F.....St. Paul
Bickel, W. H.....Rochester
Biedermann, Jacob....Thief River Falls
Bigelow, C. E.....Dodge Center
Billings, R. E.....Franklin
Binet, H. E.....Grand Rapids
Binger, H. E.....St. Paul
Binger, M. W.....Rochester
Birnberg, T. L.....St. Paul
Black, A. S., Jr.....Rochester
Black, B. M.....Rochester
Black, W. A.....Rochester
Blaisdell, J. S.....Rochester
Blake, James.....Hopkins
‡Blake, James A.....Hopkins
Blakely, C. C.....Barnum
Blakey, A. R.....Osakis
Blanchard, H. G.....Fairmont
Bloedel, T. J.....Gaylord
Blomberg, W. R.....Princeton
Blumenthal, J. S.....Minneapolis
Blumenthal, L. S.....Rochester
Blumgren, J. E.....Duluth
‡Blumstein, Alex.....Minneapolis
‡Boardman, D. V.....Twin Valley
Bock, R. A.....St. Paul
Bockman, M. W. H.....Minneapolis
‡Bodaski, A. A.....Montgomery
Boeckmann, Egil.....St. Paul
Boehrer, J. J.....Minneapolis
Bofenkamp, F. W.....Luverne
Boies, L. R.....Minneapolis
Bolender, H. L.....St. Paul
Boleyn, E. S.....Stillwater
Boline, C. A.....Battle Lake
Bolsta, Charles.....Ortonville
Boman, P. G.....Duluth
Boody, G. J., Jr.....Dawson
Booth, A. E.....Minneapolis
Boothby, W. M.....Rochester
Boreen, C. A.....Minneapolis
‡Borg, J. F.....St. Paul
Borgerson, A. H.....Long Prairie
Borgerson, M. A.....Hanley Falls
Borgeson, E. J.....Minneapolis
Borman, C. N.....Minneapolis
Borowicz, L. A.....Minneapolis
Bosland, H. G.....Verndale
Bossert, C. S.....Mora
Bottolfson, B. T.....Moorhead
Bouma, L. R.....St. Paul
†Bouman, H. A. H.....Minneapolis
Bouquet, B. J.....Wabasha
Bowen, R. L.....Hibbing
‡Bowers, R. N.....Lake City
Bowing, H. H.....Rochester
Boyd, L. M.....Alexandria
Boyer, S. H.....Duluth
‡Boyer, S. H., Jr.....Duluth
Boynton, Ruth E.....Minneapolis
Boysen, Herbert.....Madelia
‡Boysen, J. E.....Pelican Rapids
Boysen, Peter.....Pelican Rapids
Braasch, W. F.....Rochester
Bradshaw, S. P.....Rochester
Brand, G. D.....St. Paul
Brand, W. A.....Redwood Falls
‡Branham, D. S.....Albert Lea
Branton, A. F.....Willmar
Branton, B. I.....Willmar
Bratrud, A. F.....Minneapolis
Bratrud, Edward....Thief River Falls
Bratrude, E. J.....St. James
Braun, O. C.....Nashwauk
‡Braverman, N. J.....Duluth
Bray, E. R.....St. Paul
‡Bray, K. E.....Park Rapids
‡Bray, P. N.....Duluth
Bray, R. B.....Biwabik
Bregel, F. L.....St. James
‡Brekke, H. J.....Minneapolis
Breslow, Lester.....Rochester
Briggs, J. F.....St. Paul
Brigham, C. F.....St. Cloud
Brigham, F. T.....Watkins

Brindley, George V., Jr.....Rochester
Brink, A. A.....Baudette
‡Brink, D. M.....Isle
Broadie, T. E.....St. Paul
Broders, A. C.....Rochester
Brodie, W. D.....St. Paul
Broker, W. S.....Wadena
Brooks, C. N.....Minneapolis
Brown, A. E.....Rochester
Brown, A. H.....Pipestone
†Brown, E. D.....Paynesville
†Brown, E. I.....St. Paul
‡Brown, G. E., Jr.....Pine City
Brown, H. A.....Rochester
Brown, J. C.....St. Paul
‡Brown, J. R.....Rochester
Brown, L. L.....Crookston
‡Brown, M. H.....Rochester
‡Brown, P. W.....Rochester
‡Brown, S. P.....Minneapolis
Brown, W. D.....Minneapolis
‡Browne, H. C., Jr.....Rochester
Brownstone, Manuel.....Sandstone
Bruder, V. F. J.....Winona
Brunsting, L. A.....Rochester
Brusegard, J. F.....Red Wing
‡Brutsch, G. C.....Minneapolis
‡Bryant, F. L.....Minneapolis
‡Bryson, J. C.....Rochester
‡Buchstein, H. F.....Minneapolis
Buck, F. H.....Shakopee
‡Buck, R. M.....Rochester
Buckley, R. P.....Duluth
Buie, L. A.....Rochester
‡Bulinski, T. J.....St. Paul
Bulkley, Kenneth.....Minneapolis
Bunker, B. W.....Anoka
‡Burch, E. P.....St. Paul
Burch, F. E.....St. Paul
‡Burchell, H. B.....Rochester
Burdon, Phyllis J.....Rochester
Burkhart, R. J.....Rochester
‡Burlingame, D. A.....Minneapolis
Burnap, W. L.....Fergus Falls
‡Burns, F. M.....Milan
‡Burns, L. S.....So. St. Paul
Burns, M. A.....Milan
Burns, R. M.....St. Paul
Burton, C. G.....St. Paul
Buscher, J. C.....St. Cloud
Busher, H. H.....St. Paul
*Butler, John .....Minneapolis
Butler, J. K.....Carlton
‡Butt, H. R.....Rochester
Butturff, C. R.....Freeborn
‡Butzer, J. A.....Mankato
Buzzelle, L. K.....Minneapolis

Cable, M. L.....Minneapolis
Cabot, C. M.....Minneapolis
Cabot, V. S.....Minneapolis
Cady, L. H.....Minneapolis
‡Cain, C. L.....St. Paul
*Caine, C. E.....Morris
Cairns, R. I.....Redwood Falls
‡Caldwell, H. W.....Rochester
*Caldwell, J. P.....St. Paul
Calhoun, F. W.....Albert Lea
‡Call, J. D.....Rochester
Callahan, F. F.....Ah-Gwah-Ching
Callerstrom, G. W.....Minneapolis
Calmenson, Marvin .....Rochester
Cameron, Isabell L.....Minneapolis
Cameron, J. H.....Erskine
Cameron, J. M.....Rochester
‡Camp, J. D.....Rochester
Camp, W. E.....Minneapolis
‡Campbell, C. M., Jr.....Rochester
‡Campbell, D. C.....Rochester
‡Campbell, J. R.....Rochester
Campbell, L. M.....Minneapolis
Campbell, O. J.....Minneapolis
‡Canfield, W. W.....Houston
Cantwell, W. F.....International Falls
Cardle, A. E.....Minneapolis
‡Cardle, G. E.....Brainerd
Carey, J. B.....Minneapolis
Carley, W. A.....St. Paul
Carlson, A. E.....Warren
Carlson, C. E.....Aitkin
Carlson, J. V.....Westbrook
Carlson, Lawrence.....Minneapolis
Carlson, L. T.....Minneapolis
‡Carlson, R. E.....Stillwater
Carman, J. E.....Detroit Lakes
Carmona, M. G.....Rochester
Caron, R. P.....Minneapolis
Carroll, W. C.....St. Paul
Carryer, H. M.....Rochester
Carstens, C. F.....Hibbing
‡Caspers, C. G.....Minneapolis
Catlin, J. J.....Buffalo
Catlin, T. J.....Buffalo
‡Cavanor, F. T.....Minneapolis
Ceder, E. T.....Rochester
‡Ceplecha, S. F.....Redwood Falls
Cervenka, C. F.....New Prague

†Chadbourn, A. G.....Heron Lake
Chadbourn, C. R.....St. Paul
‡Challman, S. A.....Minneapolis
Chambers, W. C.....Blue Earth
‡Chapman, A. S.....Rochester
Chapman, T. L.....Duluth
Chatterton, C. C.....St. Paul
Chermak, F. G.....International Falls
Chesley, A. J.....St. Paul
‡Christensen, C. H.....Duluth
Christensen, E. E.....Winona
Christensen, E. P.....Two Harbors
Christensen, N. A.....Rochester
Christenson, G. R.....Minneapolis
Christiansen, Andrew.....St. Paul
Christianson, H. W.....Minneapolis
†Christie, G. R.....Long Prairie
Christie, R. L.....Long Prairie
†Christison, J. T.....St. Paul
‡Chunn, S. S.....Pipestone
Clagett, O. T.....Rochester
‡Clapp, Stewart.....Duluth
Clark, F. F.....Duluth
Clark, H. B.....St. Cloud
‡Clark, H. B., Jr.....St. Paul
†Clark, H. S.....Minneapolis
Clark, L. W.....Spring Valley
Clarke, E. K.....St. Paul
‡Clarke, E. T.....Rochester
Clarkson, W. R.....Rochester
Clay, L. B.....Minneapolis
Claydon, H. F.....Red Wing
Claydon, L. E.....Red Wing
‡Cleaves, W. D.....Grand Rapids
‡Clegg, R. S.....Duluth
Clement, J. B.....Lester Prairie
‡Cleveland, W. H.....Rochester
Clifford, G. W.....Alexandria
Clifton, T. A.....Chatfield
Clothier, E. F.....Elk River
Cluxton, H. E., Jr.....Rochester
‡Cochrane, B. B.....St. Paul
‡Cochrane, R. F.....Minneapolis
‡Cochrane, W. J.....Lake City
‡Coddon, W. D.....St. Paul
Cohen, B. A. .....Minneapolis
Cohen, S. S.....Oak Terrace
Colby, W. L.....St. Paul
Cole, W. H.....St. Paul
†Collie, H. G.....St. Paul
Collins, A. N.....Duluth
†Collins. H. C.....Duluth
Collins, J. S.....Wabasha
‡Colp, F. A.....Robbinsdale
Colvin, A. R.....St. Paul
Combacker, L. C.....Fergus Falls
Comfort, M. W.....Rochester
Condit, W. H.....Minneapolis
‡Condon, W. B.....Rochester
Conlin, L. J.....North St. Paul
†Conner, H. M.....Rochester
Connolly, C. J.....Rochester
Connor, C. E.....St. Paul
‡Cook, C. K.....St. Paul
Cook, E. N.....Rochester
Cook, J. M.....Staples
‡Coombs, C. H.....Cass Lake
Cooney, H. C.....Princeton
‡Cooper, C. C.....St. Paul
Cooper, M. D.....Winnebago
‡Cooper, Talbert.....Rochester
Cooper, W. L.....Rochester
Copsey, H. G.....Rochester
Corbett, J. F.....Minneapolis
Corbitt, R. W.....Rochester
Corniea, A. D.....Minneapolis
†Corrigan, J. E.....Spooner
Cosgriff, J. A.....Olivia
Counseller, V. S.....Rochester
Countryman, R. S.....St. Paul
Covell, W. W.....St. Peter
‡Coventry, M. B.....Rochester
Coventry, W. A.....Duluth
‡Coventry, W. D.....Duluth
Cowan, D. W.....Minneapolis
†Cowern. E. W.....N. St. Paul
‡Cragg, R. W.....Rochester
Craig, C. C.....International Falls
‡Craig, W. McK.....Rochester
Cranmer, R. R.....Minneapolis
‡Cranston, R. W.....Minneapolis
Creevy, C. D.....Minneapolis
‡Creighton, R. H.....Minneapolis
Crenshaw, J. L.....Rochester
Crewe, J. E.....Rochester
Critchfield, L. R.....St. Paul
Crombie, F. J.....North St. Paul
Cronkite, A. E.....Rochester
Crow, E. R.....Ah-Gwah-Ching
Crump, J. W.....St. Paul
Culligan, J. M.....St. Paul
Cumming, H. A.....Minneapolis
‡Cummings, D. W.....Rushford
‡Cunningham, B. P.....Rochester
‡Cunningham, C. B.....Virginia
Curtin, J. F.....Minneapolis
Curtis, R. A.....Le Center

‡Cusick, P. L.....Rochester
Custer, M. D., Jr.....Rochester
Cutts, George.....Minneapolis

Dack, L. G.....St. Paul
Dady, E. E.....Minneapolis
Dahl, E. O.....Minneapolis
Dahl, G. A.....Mankato
Dahl, J. A.....Minneapolis
‡Dahle, M. B.....Glenwood
Dahleen, H. C.....Rochester
Daignault, Oscar .....Benson
Daniel, D. H.....Minneapolis
*Daniel, L. M.....Minneapolis
Danielson, K. A.....Litchfield
Danielson, Lennox.....Litchfield
Darius, D. J.....Cass Lake
Darling, J. P.....Rochester
†Daugherty, E. B..Marine-on-St. Croix
Daugherty, G. W.....Rochester
Daugherty, L. E.....St. Paul
Davies, L. T.....Rochester
Davies, R. J.....Nopeming
Davis, A. C.....Rochester
Davis, E. V. .....St. Paul
†Davis, Herbert.....St. Paul
Davis, I. G.....Rushford
Davis, J. C.....Minneapolis
‡Davis, L. F.....Wadena
Davis, L. T.....Wadena
Davis, R. D.....Clearbrook
Davis, T. C.....Wadena
†Davis, William.....St. Paul
Day, Lois A.....Rochester
Dearing, W. H., Jr.....Rochester
De Boer, Hermanus.....Edgerton
DeCourcey, D. M.....St. Paul
Dedolph, Karl.....St. Paul
†Dedolph, T. H.....Minneapolis
*Delavan, P. A.....St. Paul
‡Delmore, J. L., Jr.....Roseau
Delmore, J. L.....Roseau
del Plaine, C. W.....Minneapolis
‡Demo, P. W.....Wells
‡Demong, C. V.....Rochester
†Dempsey, D. P.....Kellogg
Denman, A. V.....Mankato
Dennis, Clarence.....Minneapolis
Derauf, B. I.....St. Paul
‡Derifield, R. S.....Crookston
Desjardins, A. U.....Rochester
Deterling, R. A., Jr.....Rochester
Devereaux, T. J.....Wayzata
Dewey, D. H.....Owatonna
Dickson, F. H., Jr.....Proctor
Dickson, T. H.....St. Paul
Diehl, H. S.....Minneapolis
Diessner, H. D.....Minneapolis
Dittman, G. C.....St. Paul
Dittrich, R. J.....Duluth
Dixon, C. F.....Rochester
Dobyns, B. M.....Rochester
Dockerty, M. B.....Rochester
Doleman, N. F.....Tintah
‡Doman, V. W.....Lakefield
Doms, H. C. A.....Slayton
Donaldson, C. S.....Foley
Donoghue, F. E.....Rochester
Donohue, P. F.....St. Paul
Donovan, D. L.....Albert Lea
Doolittle, L. E.....Duluth
Dordal, John.....Sacred Heart
Dorge, R. I.....Minneapolis
Dornblaser, H. B.....Minneapolis
Dorsey, G. C.....Minneapolis
Douglass, B. E.....Rochester
Dovre, C. M.....St. Paul
‡Dowidat, R. W.....Minneapolis
‡Downing, A. H.....Minneapolis
Dowswell, W. J.....Kerkhoven
Doxey, G. L.....Minneapolis
‡Doyle, G. C.....Duluth
Doyle, L. O.....Minneapolis
Drake, C. B.....St. Paul
Drake, C. R.....Minneapolis
†Drake, F. A.....Lanesboro
‡Drapiewski, J. F.....Rochester
Dredge, H. P.....Sandstone
Drill, H. E.....Hopkins
Drips, Della G.....Rochester
Drought, W. W.....Fergus Falls
‡Dry, T. J.....Rochester
Dubbe, F. H.....New Ulm
Du Bois, J. F.....Sauk Centre
‡Duff, E. R.....Minneapolis
Dukelow, D. A.....Minneapolis
DuMais, A. F.....Rochester
Dumas, A. G.....Minneapolis
Duncan, J. W.....Moorhead
Dungay, N. S.....Northfield
Dunlap, D. L.....Rochester
Dunlap, E. H.....Minneapolis
Dunn, G. R.....Minneapolis
Dunn, J. N.....St. Paul
Duryea, W. M.....Minneapolis
†Dutton, C. E.....Minneapolis
Dvorak, B. A.....Minneapolis

Dwan, P. F. ..... Minneapolis
‡Dworak, A. F. ..... St. Paul
‡Dworsky, S. D. ..... Minneapolis
‡Dysterheft, A. F. ..... Gaylord

Earl, George ..... St. Paul
‡Earl, J. R. ..... St. Paul
Earl, Robert ..... St. Paul
‡East, John ..... Northome
Eaton, L. M. ..... Rochester
Eaves, G. B. ..... Wabasso
Eberlin, E. A. ..... Glenwood
‡Eckdale, J. E. ..... Lyle
‡Eckhardt, C. L. ..... Austin
Eckman, P. F. ..... Duluth
Eckman, R. J. ..... Duluth
Ederer, J. J. ..... Mahnomen
Edlund, Gustaf ..... St. Paul
‡Edwards, J. W. ..... St. Paul
†Edwards, R. T. ..... Big Fork, Mont.
Edwards, T. J. ..... St. Paul
‡Egan, Sherman ..... Rochester
‡Eginton, C. T. ..... St. Paul
Ehni, G. J. ..... Rochester
Ehrenberg, C. J. ..... Minneapolis
Ehrlich, S. P. ..... Minneapolis
Eich, Matthew ..... Minneapolis
Eiler, John ..... Park Rapids
Eisenstadt, D. H. ..... Minneapolis
‡Eisenstadt, W. S. ..... Minneapolis
Eitel, G. D. ..... Minneapolis
Ekblad, J. W. ..... Duluth
Elias, F. J. ..... Duluth
Elkins, E. C. ..... Rochester
Ellingson, A. R. ..... Detroit Lakes
Ellingson, E. A. ..... Rochester
Ellis, E. W. ..... Elgin
Ellison, A. B. C. ..... Rochester
Ellison, D. E. ..... Minneapolis
Ellison, F. E. ..... Monticello
Elsey, E. M. ..... Glenwood
Elsey, J. R. ..... Glenwood
Ely, O. S. ..... So. St. Paul
Emanuel, K. W. ..... Duluth
Emerson, E. C. ..... St. Paul
‡Emerson, G. F. ..... Rochester
Emmerson, W. S. ..... Mayer
Emmett, J. L. ..... Rochester
Emond, A. J. ..... Farmington
Endress, E. K. ..... St. Paul
Engberg, E. J. ..... Faribault
Engdahl, F. W. ..... Mankato
*Engh, Sigfred ..... Jackson
Englehart, P. C. ..... Minneapolis
Engstrand, O. J. ..... Minneapolis
Engstrom, G. F. ..... Belgrade
Enroth, O. E. ..... White Bear Lake
Eppard, R. M. ..... Cloquet
Erich, J. B. ..... Rochester
‡Erickson, A. O. ..... Ivanhoe
‡Erickson, C. O. ..... Rochester
Erickson, D. J. ..... Rochester
Erickson, Eskil ..... Halstad
Erickson, E. W. ..... Rochester
Erickson, R. E. ..... Hector
‡Erickson, R. F. ..... Minneapolis
‡Ericson, R. M. ..... Minneapolis
Ericson, Swan ..... Le Sueur
Ernest, G. C. H. ..... So. St. Paul
Erskine, G. M. ..... Grand Rapids
Ertel, E. O. ..... Ellendale
†Eshelby, E. C. ..... St. Paul
Esser, John ..... Perham
Esser, O. J. ..... New Ulm
Estrem, C. O. ..... Fergus Falls
‡Estrem, R. D. ..... Fergus Falls
Estrem, T. A. ..... Hibbing
Eusterman, G. B. ..... Rochester
Evans, C. H., Jr. ..... Rochester
‡Evans, E. T. ..... Minneapolis
Evans, L. M. ..... Sauk Rapids
†Evarts, A. B. ..... Rochester
Ewens, H. B. ..... Virginia
Ewing, C. F. ..... Wheaton
Eyres, T. E. ..... Pequot

Faher, J. E. ..... Rochester
Faber, W. M. ..... Rochester
Fahlund, G. T. R. ..... Rochester
†Fahey, E. W. ..... St. Paul
Fair, E. E. ..... Rochester
‡Fait, R. V. ..... Little Falls
Fankhoner, A. V. ..... Buhl
Fansler, W. A. ..... Minneapolis
Farrish, R. C. ..... Sherburn
‡Farsht, I. J. ..... Minneapolis
Fawcett, A. M. ..... Renville
Fawcett, K. R. ..... Duluth
‡Fawcett, R. M. ..... Rochester
Feeney, J. M. ..... Minneapolis
Feinstein, J. Y. ..... Spring Grove
Feldman, F. M. ..... Rochester
‡Fellows, M. F. ..... Duluth
Fenger, E. P. K. ..... Oak Terrace
‡Ferguson, F. F. ..... Detroit, Mich.
Ferguson, J. C. ..... St. Paul
Ferguson, W. C. ..... Walnut Grove
‡Ferguson, W. J., Jr. ..... Rochester
Ferguson, Wilson, J. ..... Rochester
Ferris, D. O. ..... Rochester
Fesenmaier, O. B. ..... New Ulm
Fesler, H. H. ..... St. Paul
‡Fetterly, Warren ..... Minneapolis
‡Feuling, J. C. ..... Bovey
‡Field, A. H. ..... Farmington
Figi, F. A. ..... Rochester
‡Fink, D. L. ..... Minneapolis
Fink, L. W. ..... Minneapolis
Fink, W. H. ..... Minneapolis
Fisch, H. M. ..... Austin
Fischer, Albert ..... Rochester
Fischer, M. McC. ..... Duluth
Fisher, I. I. ..... Ceylon
‡Fiskett, Henry ..... Duluth
†Fitzgerald, D. F. ..... Minneapolis
Fitzgerald, E. T. ..... Morris
Fitzsimons, W. E. ..... Brainerd
Fjeldstad, C. A. ..... Minneapolis
Flanagan, H. F. ..... St. Paul
Fleming, A. S. ..... Minneapolis
Fleming, T. N. ..... St. Cloud
‡Flesche, B. A. ..... Lake City
Flickinger, F. M. ..... Rochester
‡Flinn, J. H. ..... Rochester
Flinn, T. E. ..... Redwood Falls
Flom, M. G. ..... Zumbrota
Foerster, J. M. ..... Rochester
Fogarty, C. W., Jr. ..... Rochester
Fogarty, C. W. ..... St. Paul
Fogelberg, E. J. ..... St. Paul
Foker, L. W. ..... Minneapolis
Foley, F. E. B. ..... St. Paul
Folken, F. G. ..... Albert Lea
Forbes, R. S. ..... Duluth
Ford, B. C. ..... Marshall
Ford, W. H. ..... Minneapolis
‡Forney, R. A. ..... Rochester
Fortner, Lucille L. ..... Rochester
Foshager, H. T. ..... Clara City
Foss, E. L. ..... Rochester
‡Foster, M. A. ..... Rochester
Foster, T. N. ..... Rochester
Foster, W. K. ..... Minneapolis
‡Fowler, L. H. ..... Minneapolis
Franchere, F. W. ..... Lake Crystal
Francis, D. W. ..... Morristown
‡Frane, D. B. ..... Minneapolis
‡Frank, J. E. ..... Marshall
Fredericks, G. M. ..... Minneapolis
Frederickson, Alice C. ..... Willmar
Frederickson, G. U. Y. ..... Willmar
Fredlund, M. L. ..... Minneapolis
Freeman, C. D. ..... St. Paul
Freeman, G. H. ..... St. Peter
Freeman J. P. ..... Albert Lea
Freeman, W. L. ..... St. Cloud
‡Freeman, W. N. ..... Perham
Fried, L. A. ..... Minneapolis
Friedman, L. L. ..... St. Paul
Freligh, W. P. ..... Albert Lea
Fricke, R. E. ..... Rochester
Friedell, George ..... Ivanhoe
‡Friedell, M. T. ..... Rochester
Friesleben, William ..... Sauk Rapids
Frisch, F. P. ..... Willmar
Fritsche, Albert ..... New Ulm
‡Fritsche, C. J. ..... New Ulm
Fritsche, T. R. ..... New Ulm
Fritz, W. L. ..... St. Paul
‡Fritzell, K. E. ..... Minneapolis
Froats, C. W. ..... St. Paul
Frost, E. H. ..... Willmar
Frost, H. T. ..... Wadena
Frost, J. B. ..... Minneapolis
Fugina, G. R. ..... Mankato
Fuller, Alice H. ..... Minneapolis
‡Funk, V. K. ..... Oak Terrace

Gaarde, F. W. ..... Rochester
Gaarde, F. W., Jr. ..... Rochester
Gager, E. C. ..... St. Paul
Gaida, J. B. ..... St. Cloud
Gaines, E. C. ..... Buffalo Lake
Gallagher, B. J. ..... Waseca
‡Galloway, J. B. ..... Minneapolis
Gambill, E. E. ..... Rochester
Gamble, J. W. ..... Albert Lea
Gamble, P. M. ..... Albert Lea
Gammell, J. H. ..... Minneapolis
Garbrecht, A. W. ..... St. Paul
Gardiner, D. G. ..... St. Paul
Gardner, E. L. ..... Minneapolis
Gardner, V. H. ..... Fairmont
Gardner, W. P. ..... St. Paul
Garlock, A. V. ..... Bemidji
Garlock, D. H. ..... Bemidji
‡Garrow, D. M. ..... St. Paul
Garten, J. L. ..... Minneapolis
Geer, E. K. ..... St. Paul
Gehlen, J. N. ..... St. Paul
Geist, G. A. ..... St. Paul
Gelbach, P. D. ..... Rochester
Gendron, J. F. X. ..... Grand Rapids
Gentry, R. W. ..... Rochester
Gerber, M. P. ..... Brainerd
Germo, Charles ..... Balaton
Ghent, C. H. ..... St. Paul
Ghormley, R. K. ..... Rochester
Ghostley, Mary C. ..... Puposky
Gibbons, F. C. ..... Comfrey
Gibbs, E. C. ..... St. Paul
‡Giere, J. C. ..... Minneapolis
Giere, R. W. ..... Minneapolis
Giere, S. W. ..... Benson
‡Giesen, A. F. ..... Starbuck
†Giessler, P. W. ..... Minneapolis
‡Giffin, H. M. ..... Rochester
Giffin, H. Z. ..... Rochester
‡Gifford, B. L. ..... Long Prairie
Gilbert, M. G. ..... Minneapolis
Gilbertson, Eva L. ..... Rochester
†Gilfillan, J. S. ..... St. Paul
Gilkey, S. E. ..... St. Paul
Gilles, F. L. ..... Minneapolis
‡Gillespie, D. R. ..... Rochester
Gillespie, M. G. ..... Duluth
‡Gilman, L. C. ..... Atwater
†Gilmore, Rowland ..... Bemidji
Gingold, B. A. ..... Minneapolis
Ginsberg, William ..... St. Paul
Girvin, R. B. ..... Minneapolis
Glahe, R. A. ..... Plainview
Glenn, D. L. ..... Rochester
‡Glomset, D. A. ..... Rochester
Glover, R. P. ..... Rochester
Goblirsch, A. P. ..... Sleepy Eye
‡Goehrs, G. H. ..... St. Cloud
Goehrs, H. W. ..... St. Cloud
Golberg, M. L. ..... Minneapolis
‡Goldberg, I. M. ..... Minneapolis
Golden, P. B. ..... Rochester
Goldish, D. R. ..... Duluth
Goldman, T. I. ..... Minneapolis
‡Goldner, M. Z. ..... Minneapolis
Goltz, E. V. ..... St. Paul
Good, C. A., Jr. ..... Rochester
Good, H. D. ..... Minneapolis
Goodman, C. E. ..... Virginia
‡Gordon, P. E. ..... Minneapolis
‡Gore, H. R. ..... Rochester
Gorenflo, Leila A. ..... Ah-Gwah-Ching
‡Gorsuch, M. T. ..... Rochester
‡Goss, H. C. ..... Glencoe
Goss, Martha D. ..... Glencoe
Gosslee, G. L. ..... Moorhead
‡Gowan, L. R. ..... Duluth
‡Grabow, J. J. ..... Duluth
Graham, A. W. ..... Chisholm
‡Graham, F. M. ..... Rochester
Graham, R. B. ..... Rochester
‡Graham, R. J. ..... Rochester
Grahek, J. P. ..... Ely
Grangaard, H. O. ..... Proctor
Grant, H. W. ..... St. Paul
Gratzek, Thomas ..... St. Paul
‡Grau, R. K. ..... St. Paul
Grave, Floyd ..... Minneapolis
‡Graves, R. B. ..... Red Wing
‡Graves, W. N. ..... Duluth
Gray, F. D. ..... Marshall
Gray, H. K. ..... Rochester
Gray, R. C. ..... Minneapolis
‡Gray, R. F. ..... Marshall
**Greathouse, J. D. ..... Minneapolis
Green, R. G. ..... Minneapolis
Green, W. S. ..... Rochester
Greene, L. F. ..... Rochester
Greenfield, W. T. ..... Delano
Griffin, P. J. ..... Fertile
‡Grimes, B. P. ..... St. Peter
Grimes, H. B. ..... Madelia
Grimes, Marian ..... Minneapolis
‡Grindlay, J. H. ..... Rochester
Grise, W. B. ..... Austin
Griswold, F. E. ..... Hoffman
Grogan, J. S. ..... Wadena
‡Gronvall, P. R. ..... Minneapolis
Groschupf, T. P. E. ..... Bemidji
Grose, F. N. ..... Clarissa
Gruenhagen, A. P. ..... St. Paul
Grundset, O. J. ..... Montrose
‡Guernsey, D. E. ..... Rochester
‡Guilfoile, P. J. ..... Delano
Guldseth, G. J. ..... Duluth
Gullixson, Andrew ..... Albert Lea
Gully, R. J. ..... Cambridge
Gunderson, N. A. ..... Minneapolis
Gushurst, E. G. ..... Minneapolis
‡Gustason. H. T. ..... Minneapolis
Guthrie, R. F. ..... New Brunswick, N. J.

‡Haavik, J. E. ..... St. Paul
Habein, H. C. ..... Rochester
Haberman, Emil ..... Osakis
‡Hackie, E. A. ..... Hallock
†Hacking, F. H. ..... Minneapolis
‡Haes, J. E. ..... Vernon Center
Hagedorn, A. B. ..... Rochester
Hagen, O. E. ..... Butterfield

**Died in Service

Hagen, O. J. ..... Moorhead
‡Hagen, W. S. ..... Minneapolis
†Haggard, G. D. ..... Minneapolis
Haight, G. G. ..... Audubon
Haines, J. H. ..... Stillwater
Haines, R. D. ..... Rochester
Haines, S. F. ..... Rochester
‡Haisten, A. S. ..... Rochester
Halenbeck, P. L. ..... St. Cloud
Hall, A. R. ..... St. Paul
Hall, B. E. ..... Rochester
Hall, H. B. ..... Minneapolis
Hall, H. H. ..... St. Paul
Hall, J. M. ..... Minneapolis
Halladay, G. J. ..... Brainerd
Hallberg, C. A. ..... Minneapolis
Hallberg, O. E. ..... Rochester
Hallenbeck, D. F. ..... Rochester
‡Hallenbeck, G. A. ..... Rochester
**Haller, W. M. ..... Bemidji
Hallin, R. P. ..... Worthington
‡Hallock, Philip ..... Minneapolis
Halloran, W. H. ..... Jackson
Halpern, D. J. ..... Brewster
Halpin, J. E. ..... Rush City
Hamel, A. L. ..... Minneapolis
Hamlin, G. B. ..... Minneapolis
‡Hamlon, J. S. ..... St. Charles
Hamm, R. S. ..... Rochester
Hammar, L. M. ..... Two Harbors
Hammermeister, T. F. ..... New Ulm
‡Hammerstad, L. M. ..... Minneapolis
Hammes, E. M. ..... St. Paul
Hammes, E. M., Jr. ..... Rochester
Hammond, A. J. H. ..... Minneapolis
Hammond, J. F. ..... St. Paul
Haney, C. L. ..... Duluth
‡Hankerson, R. G. ..... Minnesota Lake
‡Hanlon, G. H. ..... Rochester
Hannah, H. B. ..... Minneapolis
Hanover, R. D. ..... Littlefork
Hansen, C. O. ..... Minneapolis
Hansen, E. W. ..... Minneapolis
Hansen, Olga S. ..... Minneapolis
Hanson, A. M. ..... Faribault
Hanson, E. O. ..... Cloquet
Hanson, E. C. ..... New York Mills
Hanson, H. B. ..... St. Paul
Hanson, H. J. ..... Minneapolis
Hanson, H. V. ..... Minneapolis
Hanson, J. W. ..... Northfield
Hanson, Lewis ..... Frost
Hanson, M. B. ..... Minneapolis
‡Hanson, N. O. ..... Rochester
Hanson, W. A. H. ..... Minneapolis
Happe, L. J. ..... Minneapolis
Hargraves, M. M. ..... Rochester
‡Harley, R. D. ..... Rochester
‡Harlowe, H. D. ..... Virginia
Harmon, G. E. ..... St. Paul
‡Harper, S. B. ..... Rochester
‡Harri, E. J. ..... Carlton
Harriman, Leonard ..... Howard Lake
Harrington, C. D. ..... Wayzata
Harrington, F. E. ..... Minneapolis
Harrington, S. W. ..... Rochester
Harris, C. N. ..... Hibbing
Harrison, P. W. ..... Worthington
‡Hart, V. L. ..... Minneapolis
‡Hart, W. E. ..... Monticello
Hartfiel, W. F. ..... St. Paul
Hartig, Hermina A. ..... Minneapolis
Hartig, Marjorie ..... St. Paul
Hartley, E. C. ..... St. Paul
Hartman, H. R. ..... Rochester
‡Hartmann, C. M. ..... Fairfax
‡Hartnagel, G. F. ..... Red Wing
Hartung, E. H. ..... Claremont
†Hartzell, T. B. ..... Minneapolis
‡Harvey, George, Jr. ..... Rochester
Haskell, A. D. ..... Alexandria
Hassett, M. F. ..... St. Paul
Hassett, R. G. ..... Mankato
Hastings, D. R. ..... Minneapolis
Hatch, W. E. ..... Duluth
‡Hathaway, S. J. ..... Proctor
‡Hauge, E. T. ..... Minneapolis
Hauge, M. I. ..... Clarkfield
‡Haugen, J. A. ..... Minneapolis
Hauser, V. P. ..... St. Paul
Havel, H. W. ..... Jordan
‡Havel, T. E. ..... Blue Earth
Haven, W. K. ..... Minneapolis
Havens, F. Z. ..... Rochester
Havens, J. G. W. ..... Austin
Hawkins, W. J. ..... Rochester
Hawkinson, J. P. ..... Crosby
‡Hawkinson, R. P. ..... Minneapolis
Hayes, M. F. ..... Nashwauk
‡Hays, A. T. ..... Minneapolis
‡Head, D. P. ..... Minneapolis
Head, G. D. ..... Minneapolis
Healy, R. T. ..... Pierz
*Heath, A. C. ..... Stillwater
‡Hebbel, Robert ..... Minneapolis

Hebeisen, M. B. ..... Chaska
Heck, F. J. ..... Rochester
‡Heck, W. W. ..... St. Paul
Hedback, A. E. ..... Minneapolis
Hedberg, G. A. ..... Nopeming
Hedemark, H. H. ..... Thief River Falls
Hedenstrom, F. G. ..... St. Paul
Hedenstrom, L. H. ..... Cambridge
Hedin, R. F. ..... Red Wing
Heersema, P. H. ..... Rochester
Hegge, O. H. ..... Austin
Hegge, R. S. ..... Austin
Heiam, W. C. ..... Cook
Heiberg, E. A. ..... Fergus Falls
Heiberg, O. M. ..... Worthington
Heilman, Dorothy M. H. ..... Rochester
Heilman, F. R. ..... Rochester
Heim, D. J. ..... Rochester
Heim, R. R. ..... Minneapolis
Heimark, J. J. ..... Fairmont
‡Heinrich, W. A. ..... Rochester
‡Heinz, Ivy B. ..... Hastings
‡Heinz, L. H. ..... Hastings
Heise, Herbert ..... Winona
Heise, W. F. C. ..... Winona
Heise, W. V. ..... Winona
‡Helferty, J. K. ..... Tracy
Helland, G. M. ..... Spring Grove
Helland, J. W. ..... Spring Grove
Helmholz, H. F. ..... Rochester
Helseth, H. K. ..... Thief River Falls
Hempstead, B. E. ..... Rochester
†Hemstead, Werner ..... Fergus Falls
‡Hench, P. S. ..... Rochester
Henderson, A. J. G. ..... Minneapolis
‡Henderson, J. W. ..... Rochester
Henderson, L. L. ..... Rochester
Henderson, M. S. ..... Rochester
Hendrickson, J. F. ..... Minneapolis
‡Hendrickson, R. R. ..... Lake Park
Hengstler, W. H. ..... St. Paul
Henney, W. H. ..... McIntosh
Henrikson, E. C. ..... Minneapolis
†Henry, C. E. ..... Kirksville, Mo.
Henry, C. J. ..... Milaca
Henry, M. O. ..... Minneapolis
Hensel, C. N. ..... St. Paul
Henslin, A. E. ..... Le Roy
‡Herbert, W. L. ..... Minneapolis
Herbst, R. F. ..... Wykoff
‡Herman, Samuel ..... St. Paul
Hermanson, P. E. ..... Hendricks
Heron, R. C. ..... St. Paul
Herrell, W. E. ..... Rochester
Herrmann, E. T. ..... St. Paul
Hertel, G. E. ..... Austin
Hertz, M. J. ..... St. Paul
Hertzog, A. J. ..... Minneapolis
Hewitt, Edith S. ..... Rochester
†Hewitt, R. M. ..... Rochester
†Heyerdale, O. C. ..... Rochester
‡Heyerdale, W. W. ..... Rochester
Higgins, J. H. ..... Minneapolis
‡Higginson, J. F. ..... Rochester
Higgs, W. W. ..... Park Rapids
Hilding, A. C. ..... Duluth
Hilger, A. W. ..... St. Paul
Hilger, D. D. ..... St. Paul
‡Hilger, J. A. ..... St. Paul
Hilger, L. A. ..... St. Paul
Hilger, L. D. ..... St. Paul
†Hill, Eleanor J. ..... Minneapolis
Hill, F. E. ..... Duluth
‡Hill, J. R. ..... Rochester
‡Hillis, S. J. ..... Minneapolis
Hinckley, R. G. ..... Minneapolis
Hines, E. A., Jr. ..... Rochester
Hiniker, L. P. ..... St. Paul
Hiniker, P. J. ..... Le Sueur
Hinshaw, H. C. ..... Rochester
Hirschboeck, F. J. ..... Duluth
*Hirschfield, M. S. ..... Duluth
Hirshfield, F. R. ..... Minneapolis
Hitchings, W. S. ..... Lakefield
Hoagland, P. I., Jr. ..... Rochester
†Hoaglund, A. W. ..... Minneapolis
†Hobbs, C. A. ..... Minneapolis
Hochfilzer, J. J. ..... St. Paul
Hodapp, R. J. ..... Willmar
Hodge, S. V. ..... Minneapolis
Hodgson, C. H. ..... Lima, Peru
Hodgson, Jane E. ..... Rochester
Hoeper, P. G. ..... Mankato
Hoff, Alfred ..... St. Paul
Hoff, H. O. ..... Duluth
Hoffbauer, F. W. ..... Minneapolis
Hoffert, H. E. ..... Minneapolis
Hoffman, M. H. ..... St. Paul
‡Hoffman, R. A. ..... Minneapolis
Hoffman, W. L. ..... Minneapolis
Hoidale, A. D. ..... Tracy
Holcomb, J. T. ..... Marine-on-St. Croix
Holcomb, O. W. ..... St. Paul
†Holl, P. M. ..... Minneapolis
Hollands, W. H. ..... Fisher
Holm, H. H. ..... Glencoe
†Holm, P. F. ..... Wells

‡Holmberg, C. J. ..... Minneapolis
Holmberg, L. J. ..... Canby
Holmen, R. W. ..... St. Paul
Holmes, A. E. ..... Rush City
Holmstrom, C. H. ..... Warren
‡Holt, G. W. ..... Wabasha
Holt, J. E. ..... St. Paul
‡Holt, W. B. ..... Minneapolis
Holtan, Theodore ..... Waterville
Holzapfel, F. C. ..... Minneapolis
‡Honke, R. W. ..... Proctor
‡Hopkins, G. W. ..... St. Paul
Hopping, R. A. ..... Rochester
Horton, B. T. ..... Rochester
‡Hottinger, R. C. ..... Janesville
Houkom, Bjarne ..... Minneapolis
Houkom, S. S. ..... Duluth
House, Z. E. ..... Cass Lake
‡Houston, D. M. ..... Park Rapids
Hovde, Rolf ..... Winthrop
Hovland, M. L. ..... Minneapolis
Howard, M. A. ..... St. Paul
Howard, M. I. ..... Mankato
Howard, W. S. ..... St. Paul
Howell, L. P. ..... Rochester
‡Hoyer, L. J. ..... Windom
Hoyer, L. P., Jr. ..... Rochester
Hoyne, R. M. ..... Rochester
Hubbard, O. E. ..... Brainerd
Hubin, E. G. ..... Deerwood
Hudec, E. R. ..... Echo
Hudson, G. E. ..... Minneapolis
Huenekens, E. J. ..... Minneapolis
Huffington, H. L. ..... Mankato
‡Hughes, T. J. ..... Rochester
Hullsiek, H. E. ..... St. Paul
‡Hullsiek, R. B. ..... St. Paul
Hultkrans, J. C. ..... Minneapolis
‡Hultkrans, R. E. ..... Minneapolis
Humphrey, E. W. ..... Moorhead
Humphrey, W. R. ..... Stillwater
Hunt, A. B. ..... Rochester
Hunt, R. C. ..... Fairmont
‡Hunt, R. S. ..... Fairmont
Hunte, A. F. ..... Alhambra, Calif.
‡Hunter, O. B., Jr. ..... Rochester
Hurd, Annah ..... Minneapolis
Hursh, M. M. ..... Hibbing
Hurwitz, M. M. ..... Rochester
Hutchins, S. P. ..... Rochester
‡Hutchinson, C. J. ..... Minneapolis
Hutchinson, Dorothy W. ..... Oak Terrace
Hutchinson, Henry ..... Hastings
Huxley, F. R. ..... Faribault
Hymes, Charles ..... Minneapolis
Hynes, J. E. ..... Minneapolis

Iams, A. M. ..... Rochester
Ide, A. W. ..... St. Paul
‡Idstrom, L. G. ..... Minneapolis
Ikeda, Kano ..... St. Paul
‡Ingebrigtson, E. K. G. ..... Moorhead
Ingerson, C. A. ..... St. Paul
Irvine, H. G. ..... Minneapolis
Iverson, H. A. ..... Rochester
Iverson, R. M. ..... Rochester
‡Ivie, J. McK. ..... Rochester

Jackman, R. J. ..... Rochester
†Jackson, C. M. ..... Minneapolis
‡Jacobs, D. L. ..... Willmar
Jacobs, G. C. ..... Fergus Falls
Jacobs, J. C. ..... Willmar
Jacobson, Clarence ..... Chisholm
Jamieson, E. F. ..... Brainerd
‡Janssen, M. E. ..... St. Paul
Jarboe, J. P. ..... Rochester
Jensen, A. M. ..... Brownton
Jensen, H. C. ..... Minneapolis
Jensen, M. J. ..... Minneapolis
Jensen, R. A. ..... Minneapolis
Jensen, T. J. ..... Duluth
Jesion, J. W. ..... St. Paul
Jessico, C. M. ..... Duluth
‡Johanson, W. G. ..... St. Paul
Johnson, A. B. ..... Minneapolis
Johnson, A. E. ..... Red Wing
Johnson, A. E. ..... Minneapolis
Johnson, A. M. ..... St. Paul
*Johnson, A. R. ..... Isanti
†Johnson, C. E. ..... Pine River
Johnson, C. E. ..... St. Paul
‡Johnson, C. R. ..... Rochester
Johnson, C. M. ..... Dawson
Johnson, D. L. ..... Little Falls
‡Johnson, D. W. ..... Fairmont
Johnson, E. W. ..... Bemidji
‡Johnson, E. W. ..... Minneapolis
Johnson, Evelyn V. ..... St. Louis Park
‡Johnson, H. A. ..... Minneapolis
Johnson, H. C. ..... North Mankato
Johnson, H. E. ..... Bird Island
Johnson, H. P. ..... Rochester
Johnson, Hans ..... Kerkhoven
Johnson, J. A. ..... St. Paul
Johnson, J. A. ..... Minneapolis
Johnson, J. R. ..... Rochester

**Died in Service

Johnson, Julius.....Minneapolis
‡ohnson, J. W.....Kerkhoven
‡Johnson, K. E.....Duluth
‡Johnson, M. R.....Red Wing
†Johnson, N. A...Santa Monica, Calif.
Johnson, N. P.....Minneapolis
Johnson, N. T.....Minneapolis
Johnson, O. H.....Redwood Falls
Johnson, O. V.....Fergus Falls
Johnson, Olga H.....Moorhead
Johnson, P. C.....Tyler
Johnson, R. A.....Minneapolis
Johnson, R. B.....Lanesboro
‡Johnson, R. E.....Minneapolis
Johnson, R. E.....Crookston
Johnson, R. G.....Stillwater
Johnson, R. H.....Rochester
Johnson, S. M.....Ah-gwah-ching
‡Johnson, V. M.....Dawson
Johnson, W. E.....Morgan
‡Johnson, Y. T.....Minneapolis
Johnsrud, L. W.....Hibbing
Johnston, L. F.....Slayton
Jolin, F. M.....Bovey
‡Jolin, R. V.....Grand Rapids
Jones, A. W.....Red Wing
Jones, E. M.....St. Paul
‡Jones, H. W., Jr.....Minneapolis
Jones, O. H.....Madison Lake
Jones, R. N.....St. Cloud
Jones, W. R.....Minneapolis
†Jordan, Kathleen .....Granite Falls
Jordan, L. S.....Granite Falls
Josewich, Alexander.....Minneapolis
Josewski, R. J.....Stillwater
‡Joss, C. S.....Rochester
‡Joyce, G. L.....Rochester
Judd, D. B.....Rochester
‡Judd, E. S., Jr.....Rochester
Judd, W. H.....Minneapolis
Juergens, H. M.....Belle Plaine
‡Juers, E. H.....Red Wing
Juliar, R. O.....St. Clair
‡Jump, W. C.....Kasson
Jurdy, M. J.....Minneapolis
Just, H. J.....Hastings

‡Kaasa, L. I.....Albert Lea
‡Kabler, P. W.....Minneapolis
Kalin, O. T.....Minneapolis
Kalinoff, Demeter.....Stillwater
‡Kallestad, L. L.....Hutchinson
Kamman, G. R.....St. Paul
Kamp, B. A.....Albert Lea
‡Kapernick, J. S.....Rochester
‡Kaplan, D. H.....St. Paul
Kaplan J. J.....Rochester
‡Karleen, C. I.....Tracy
Karlstrom, A. E.....Minneapolis
Karn, B. R.....Ortonville
‡Karn, J. F.....St. Paul
‡Karon, I. M.....St. Paul
Kasper, E. M.....St. Paul
Kath, R. H.....Woodlake
‡Katzovitz, Hyman.....St. Paul
Kaufman, E. J.....Appleton
Kaufman, W. B.....Mankato
Kaufman, W. C.....Appleton
‡Kauvar, A. J.....Rochester
‡Kearney, R. W.....Mankato
Keating, F. R., Jr.....Rochester
Keefe, R. E.....St. Paul
Keith, H. M.....Rochester
Keith, N. M.....Rochester
Keithahn, E. E.....Kimball
Kelby, G. M.....Sleepy Eye
‡Kelly, A. C.....Duluth
Kelly, J. V.....St. Paul
Kelly, P. H.....St. Paul
Kelsey, C. G.....Hinckley
Kemp, A. F.....Mankato
Kemp, M. W.....Moose Lake
‡Kemper, C. M.....Rochester
‡Kenefick, E. V.....St. Paul
‡Kennedy, C. C.....Minneapolis
Kennedy, G. L.....Faribault
Kennedy, Jane F.....Minneapolis
Kennedy, R. L. J.....Rochester
‡Kennedy, T. J.....Rochester
Kennedy, W. A.....St. Paul
‡Kenyon, T. J.....St. Paul
Kepler, E. J.....Rochester
Kerkhof, A. C.....Minneapolis
Kern, C. E.....Rochester
‡Kern, M. C.....Freeport
Kernohan, J. W.....Rochester
Kertesz, Geza.....Minneapolis
Kesting, Herman.....St. Paul
‡Kettlewell, R. B.....Sauk Center
Keyes, J. D.....Winona
Kierland, P. E.....Alexandria
‡Kierland, R. R.....Rochester
Kiernan, P. C.....Rochester
Kiesling, I. H.....Coleraine
Kilbride, E. A.....Worthington
Kilbride, J. S.....Canby
Kimmel, G. C., Jr.....Red Wing

†King, E. A.....Minneapolis
King, Frances W.....Oak Terrace
*King, H. T.....Minneapolis
Kingshury, E. M.....Moose Lake
Kinsella, T. J.....Minneapolis
Kirk, G. P.....East Grand Forks
Kirkland, W. G.....Rochester
‡Kirklin, B. R.....Rochester
Kirklin, O. L.....Rochester
Kistler, A. J.....Minneapolis
†Kistler, C. M.....Minneapolis
Klein, Harry.....Duluth
Klein, H. N.....St. Paul
‡Klein, J. C.....Shakopee
Klima, W. W.....Stewart
‡Klinkenberg, R. B.....Rochester
Klontz, C. E., Jr.....Rochester
Kloos, E. K.....Rochester
Knapp, F. N.....Duluth
Knapp, M. E.....Minneapolis
Knauff, M. K.....St. Paul
Knight, E. G.....Swanville
Knight, R. R.....Minneapolis
Knight, R. T.....Minneapolis
‡Knights, J. A.....Bemidji
‡Knutson, G. A.....Greenbush
Koelsche, G. A.....Rochester
Koenigsberger, Charles .....Mankato
‡Koepcke, G. M.....Minneapolis
‡Koepsell, A. A. H.....St. Paul
Kohlbry, C. O.....Duluth
Kohler, D. W.....St. Joseph
Koller, H. M.....Minneapolis
Koller, L. R.....Minneapolis
Koop, S. H.....Richmond
Korchik, J. P.....Minneapolis
Kortsch, F. P.....Prior Lake
‡Koskela, L. E.....Sebeka
Kostick, W. R.....Fertile
Kotchevar, F. R.....Eveleth
Koucky, R. W.....Minneapolis
‡Kozherg, Oscar.....Moose Lake
†Kraft, Peter .....Duluth
Kratzer, G. L.....Rochester
‡Krause, C. W.....Fairmont
‡Kreilkamp, B. L.....Rochester
Kreuzer, T. C.....Marshall
‡Krieser, A. E.....Boyd
Krueger, V. R.....Nopeming
Krusen, F. H.....Rochester
Kucera, F. J.....Hopkins
‡Kucera, L. T.....Lonsdale
Kucera, S. T.....Lonsdale
Kucera, W. J.....Minneapolis
Kugler, A. A.....St. Paul
*Kuhlmann, August .....Melrose
Kurtin, H. J.....Blooming Prairie
Kuske, A. W.....St. Paul
Kusske, A. L.....New Ulm
Kvale, W. F.....Rochester
Kvitrud, Gilhert.....St. Paul

‡La Bree, R. H.....Duluth
Laikola, L. A.....Soudan
Laird, A. T.....Duluth
Lajoie, J. M.....Minneapolis
Lake, C. F.....Rochester
Lamh, H. L.....Little Falls
Lander, H. H.....Rochester
Lang, L. A.....Minneapolis
†Langenderfer, F. V.....St. Paul
Lannin, J. C.....Mahel
Lapierre, A. P.....Minneapolis
Lapierre, J. T.....Minneapolis
‡Large, H. R.....Rochester
‡Larrabee, W. F., Jr.....Rochester
Larsen, C. L.....St. Paul
‡Larsen, F. W.....Minneapolis
*Larsen, O. O.....Detroit Lakes
Larson, Arnold.....Detroit Lakes
Larson, C. M.....Minneapolis
Larson, Eva-Jane.....St. Paul
Larson, J. T.....Lake Wilson
Larson, L. J.....Bagley
‡Larson, L. M.....Minneapolis
Larson, L. M.....Oak Terrace
‡Larson, M. H.....Nicollet
Larson, P. N.....Minneapolis
Larson, R. A.....Rochester
Latchem, C. W.....Rochester
‡Lauer, D. J.....St. Paul
La Vake, R. T.....Minneapolis
Lax, M. H.....St. Paul
Laymon, C. W.....Minneapolis
Lazar, H. L.....Minneapolis
Leahy, Bartholomew .....St. Paul
‡Leary, W. V.....Rochester
Leavenworth, R. O.....St. Paul
†Leavitt, H. H.....Minneapolis
Lehowske, J. A.....Minneapolis
‡Leck, P. C.....Austin
Leddy, E. T.....Rochester
Lee, H. M.....Minneapolis
Lee, H. W.....Brainerd
Lee, J. L.....Alexandria
Lee, W. N.....Madison
Leemhuis, G. H.....Aitkin
‡Lehnhoff, H. J., Jr.....Rochester

Leibold, H. H.....Parkers Prairie
‡Leick, R. M.....St. Paul
‡Leighton, Rohert.....Evansville
Leitch, Archibald.....St. Paul
Leitch, N. M.....Warroad
Leland, H. R.....Minneapolis
‡Leland, J. A. C., Jr.....Minneapolis
Lemon, W. E.....Rochester
Lemon, W. S.....Rochester
‡Lenander, M. E.....St. Peter
Lenarz, A. J.....Browerville
Lenont, C. B.....Virginia
Lenz, O. A.....Minneapolis
Leonard, L. J.....Minneapolis
Leonard, Samuel.....Minneapolis
Leopard, B. A.....Alhert Lea
Lepak, F. J.....Duluth
Lepak, J. A.....St. Paul
†Lerche, William.....Cable, Wis.
Leven, N. L.....St. Paul
Levin, B. G.....St. Paul
Levin, Louis .....Rochester
Levinson, J. P.....Rochester
Levitt, G. X.....St. Paul
Lewis, A. J.....Henning
Lewis, C. B.....St. Cloud
Lexa, F. J.....Lonsdale
Libert, J. N.....St. Cloud
Lichtman, A. L.....Rochester
Lick, C. L.....St. Paul
Liedloff, A. G.....Mankato
‡Lien, R. J.....Rochester
Liffrig, W. W.....Red Wing
Lightbourn, E. L.....St. Paul
Lilleherg, N. J.....St. Paul
Lillehei, E. J.....Robbinsdale
Lillie, H. I.....Rochester
‡Lillie, J. C.....Rochester
Lima, L. R.....Montevideo
Lima, L. R., Jr.....Montevideo
Lind, C. J.....Minneapolis
‡Lindahl, W. W.....Rochester
Lindberg, A. C.....Minneapolis
Lindherg, A. L.....Wheaton
‡Lindherg, V. L.....Minneapolis
Linde, Herman.....Cyrus
‡Lindgren, R. C.....Minneapolis
Lindquist, R. H.....Minneapolis
Linner, H. P.....Minneapolis
Lippman, H. S.....St. Paul
Lippmann, E. W.....Hutchinson
‡Lipschultz, Oscar.....Minneapolis
Lipscomb, P. R.....Rochester
Litchfield, J. T.....Minneapolis
‡Litman, A. B.....Minneapolis
Litman, S. N.....Duluth
‡Little, A. G., Jr.....Rochester
†Little, W. J.....St. Paul
Litzenherg, J. C.....Minneapolis
Lohitz, W. C., Jr.....Rochester
†Lochead, D. C.....Rochester
Lofgren, K. A.....Rochester
Logan, A. H.....Rochester
Logan, G. B.....Rochester
Logefeil, R. C.....Minneapolis
Lohmann, J. G.....Pipestone
Loken, S. M.....St. Paul
Loken, Theodore.....Ada
Lommen, P. A.....Austin
Long, G. C.....Rochester
†Long, Jesse.....Minneapolis
Long, R. C.....Rochester
Loofbourrow, E. H.....Keewatin
Loomis, E. A.....Minneapolis
Loomis, G. L.....Winona
Love, F. A.....Carlos
Love, J. G.....Rochester
‡Lovelace, W. R.....Rochester
‡Lovelady, S. B.....Rochester
‡Loverine, Joseph .....Rochester
Lovett, Beatrice R.....Oak Terrace
‡Lovshin, L. L.....Rochester
Lowe, E. R.....So. St. Paul
Lowe, T. A.....So. St. Paul
Lowry, Elizabeth C.....Minneapolis
Lowry, Thomas.....Minneapolis
Luck. Hilda .....Mankato
‡Luckey, C. A.....Rochester
*Luden, Georgine.....Victoria, Canada
‡Lueck, A. G.....Rochester
Lufkin, C. D.....Northfield
‡Lufkin, N. H.....Minneapolis
Lund, C. J. T.....Fergus Falls
Lund, W. J.....Staples
Lundberg, Ruth I.....Minneapolis
‡Lundhlad, R. A.....Minneapolis
‡Lundhlad, S. W.....Minneapolis
Lundgren, A. C.....Minneapolis
Lundgren, Olive A.....St. Paul
Lundholm, A. M.....St. Paul
‡Lundquist, C. W.....Winona
Lundquist, E. F.....Minneapolis
Lundy, J. S.....Rochester
Lyght, C. E.....New York, N. Y.
Lynch, F. W.....St. Paul
Lynch, M. J.....Minneapolis
‡Lynch, R. C.....Rochester

Lynde, O. G. ..... Thief River Falls
Lysne, Henry ..... Minneapolis
‡Lysne, Myron ..... Minneapolis

Macbeth, J. L. ..... St. Clair
MacCarty, C. S. ..... Rochester
†MacCarty, W. C. ..... Rochester
MacDonald, A. E. ..... Minneapolis
MacDonald, D. A. ..... Minneapolis
†Macey, H. B. ..... Rochester
Macfarlane, P. H. ..... Chisholm
Mach, F. B. ..... Minneapolis
‡Mack, J. J. ..... Chicago, Ill.
‡MacKay, H. J. ..... Seattle, Wash.
‡MacKinnon, D. C. ..... Minneapolis
†Macklin, W. E., Jr. ..... Litchfield
†MacLean, A. R. ..... Rochester
†MacMillan, D. G. ..... Triumph
Macnie, J. S. ..... Minneapolis
‡MacRae, G. C. ..... Duluth
Madden, J. F. ..... St. Paul
†Madland, R. S. ..... Fairfax
Maeder, E. C. ..... Minneapolis
Maertz, W. F. ..... New Prague
†Magath, T. B. ..... Rochester
Magney, F. H. ..... Duluth
Magnusen, A. E. ..... Wheaton
Mahle, D. G. ..... Plainview
Mahowald, Aloys ..... Albany
†Maitland, D. P. ..... Jackson
Maitland, E. T. ..... Jackson
Maland, C. O. ..... Minneapolis
Malerich, J. A. ..... St. Paul
Malmstrom, J. A. ..... Virginia
Manley, J. R. ..... Duluth
Manlove, F. R. ..... Rochester
†Mann, F. C. ..... Rochester
Manning, J. J. ..... Rochester
†Manson, F. M. ..... Worthington
†Marcley, W. J. ..... Minneapolis
Mariette, E. S. ..... Oak Terrace
Mark, D. B. ..... Minneapolis
†Mark, Hilbert ..... Minneapolis
Marking, G. H. ..... Minneapolis
‡Marks, R. W. ..... St. Paul
Marr, G. E. ..... Rochester
‡Marsh, O. M. ..... Litchfield
Martin, D. L. ..... So. St. Paul
Martin, G. M. ..... Rochester
Martin, T. P. ..... Arlington
‡Martin, W. C. ..... Duluth
Martineau, J. L. ..... St. Paul
Martinson, C. J. ..... Wayzata
‡Marvin, C. P. ..... Rochester
‡Mason, J. A. ..... International Falls
Masson, D. M. ..... Rochester
Masson, J. C. ..... Rochester
†Matchan, G. R. ..... Minneapolis
Mattill, P. M. ..... Oak Terrace
‡Mattison, P. A. ..... Winona
‡Mattison, R. E. ..... Minneapolis
‡Mattson, A. D. ..... Milaca
Mattson, C. H. ..... St. Paul
‡Mattson, H. A. N. ..... Minneapolis
Maxeiner, S. R. ..... Minneapolis
May, W. H. ..... Minneapolis
‡Mayne, R. M. ..... Duluth
‡Mayo, C. W. ..... Rochester
‡Maytum, C. K. ..... Rochester
McBroom, D. E. ..... Cambridge
‡McCaffrey, F. J. ..... Minneapolis
McCain, D. L. ..... St. Paul
‡McCall, C. H. ..... Rochester
‡McCallig, J. J. ..... Rochester
McCann, D. F. ..... Bemidji
McCarten, F. M. ..... Stillwater
‡McCarthy, Donald ..... Minneapolis
McCarthy, J. J. ..... St. Paul
McCarthy, W. J. ..... Madelia
McCarthy, W. R. ..... St. Paul
McCartney, J. S. ..... Minneapolis
McCarty, P. D. ..... Ely
McClanahan, J. H. ..... White Bear Lake
McClanahan, T. S. ..... White Bear Lake
McClellan, G. T. ..... Rochester
McCloud, C. N., Jr. ..... Rochester
†McCoy, Mary K. ..... Duluth
‡McCrimmon, H. P. ..... Minneapolis
McDaniel, Orianna ..... Minneapolis
McDonald, A. L. ..... Duluth
McDonald, J. R. ..... Rochester
McDowell, J. P. ..... St. Cloud
‡McEachern, C. G. ..... Rochester
‡McElligott, E. W. ..... Breckenridge
‡McEnaney, C. T. ..... Owatonna
McEwan, Alexander ..... St. Paul
McFarland, A. H. ..... Minneapolis
McGandy, R. F. ..... Minneapolis
McGeary, G. E. ..... Minneapolis
McGroarty, J. J. ..... Easton
McGuigan, H. T. ..... Red Wing
McHaffie, O. L. ..... Minneapolis
McInerny, M. W. ..... Minneapolis
McIntire, H. M. ..... Waseca
McIntyre, J. A. ..... Owatonna
McIver, B. A. ..... Lowry
McKaig, C. B. ..... Pine Island
McKelvey, J. L. ..... Minneapolis
McKenna, J. K. ..... Austin
McKenna, M. J. ..... Grand Rapids
‡McKenzie, C. H. ..... Minneapolis
McKeon, J. O. ..... Montgomery
McKibbin, J. P. ..... Rochester
McKinlay, C. A. ..... Minneapolis
McKinley, J. C. ..... Minneapolis
McKinney, F. S. ..... Minneapolis
McLane, Evelyn G. ..... Jackson
McLane, W. O. ..... Perham
†McLaren, Jennette M. ..... Minneapolis
McLaughlin, E. M. ..... Winona
McLennan, C. E. ..... Minneapolis
McLeod, J. L. ..... Grand Rapids
‡McMahon, L. H. ..... Breckenridge
McMahon, M. J. ..... Green Isle
McNeary, D. J. ..... Rochester
McNutt, J. R. ..... Duluth
McPheeters, H. O. ..... Minneapolis
†McQuarrie, Irvine ..... Minneapolis
Mead, C. H. ..... Duluth
Meade, J. R. ..... St. Paul
‡Mears, B. J. ..... St. Paul
Mears, R. F. ..... Northfield
‡Medelman, J. P. ..... St. Paul
Meinert, A. E. ..... Winona
Meland, E. L. ..... Minneapolis
Melby, Benedik ..... Blooming Prairie
Mellby, O. F. ..... Thief River Falls
Meller, R. L. ..... Minneapolis
Melton, T. J. ..... Rochester
Melzer, G. R. ..... Lyle
Mercil, W. F. ..... Crookston
Merkert, C. E. ..... Minneapolis
Merkert, G. L. ..... Minneapolis
†Merrill, Elisabeth ..... Minneapolis
‡Merrill, Robert ..... Morris
Merriman, L. L. ..... Duluth
Merritt, W. A. ..... Rochester
‡Metzger, G. H. ..... Olivia
‡Messler, J. D. ..... Rochester
Metcalfe, R. M. ..... Rochester
Meyer, A. A. ..... Melrose
Meyer, A. J. ..... Minneapolis
Meyer, E. L. ..... Minneapolis
Meyer, F. C. ..... Kenyon
‡Meyer, J. O. ..... Grand Rapids
Meyer, P. F. ..... Faribault
‡Meyer, W. M. ..... Winona
Meyerding, E. A. ..... St. Paul
Meyerding, H. W. ..... Rochester
Meyers, W. C. ..... Rochester
Michael, J. C. ..... Minneapolis
‡Michel, H. H. ..... Minneapolis
Michelson, H. E. ..... Minneapolis
Mickelson, J. C. ..... Mankato
Millen, F. J. ..... Rochester
Miller, E. W. ..... Anoka
‡Miller, Harold E. ..... Minneapolis
‡Miller, Hugo E. ..... Minneapolis
Miller, J. C. ..... Minneapolis
Miller, J. R., Jr. ..... Rochester
‡Miller, R. C. ..... Rochester
Miller, Sidney ..... Rochester
Miller, V. I. ..... Mankato
Miller, W. A. ..... New York Mills
Mills, J. L. ..... Winnebago
‡Milton, J. S. ..... Minneapolis
‡Minge, R. K. ..... Clarkfield
Mingo, F. E. ..... Hugo
‡Minkler, J. E. ..... Virginia
‡Minsky, A. A. ..... Minneapolis
Minty, Earl W. ..... Duluth
Mitby, I. L. ..... Aitkin
Mitchell, E. C. ..... Minneapolis
Mitchell, R. S. ..... Grand Meadow
Moberg, C. W. ..... Detroit Lakes
Moe, A. E. ..... Rochester
Moe, J. H. ..... Minneapolis
Moe, R. J. ..... Duluth
Moe, Thomas ..... Moose Lake
Moen, J. K., Jr. ..... Minneapolis
Moersch, F. P. ..... Rochester
Moersch, H. J. ..... Rochester
Moga, J. A. ..... St. Paul
‡Moir, W. W. ..... Stillwater
Molander, H. A. ..... St. Paul
‡Mollers, T. P. ..... Mountain Iron
Monahan, Elizabeth S. ..... Minneapolis
Monohan, R. H. ..... International Falls
Monroe, P. B. ..... Cloquet
‡Monserud, N. O. ..... Cloquet
‡Monson, E. N. ..... Minneapolis
‡Monson, L. J. ..... Canby
Montgomery, Hamilton ..... Rochester
Mooney, L. P. ..... Graceville
‡Moos, D. J. ..... Minneapolis
Moquin, Marie A. ..... St. Paul
More, C. W. ..... Eveleth
Morehead, D. E. ..... Owatonna
Moren, Edward ..... Minneapolis
‡Moren, L. A. ..... St. Paul
Morgan, H. O. ..... Amboy
Moriarty, Berenice ..... St. Paul
Moriarty, Cecile R. ..... St. Paul
Mork, A. H. ..... Anoka
Mork, B. O., Jr. ..... Worthington
Mork, B. O., Sr. ..... Worthington
‡Mork, F. E. ..... Anoka
Morley, G. A. ..... Crookston
Morlock, C. G. ..... Rochester
Morrison, A. W. ..... Minneapolis
Morrison, Charlotte J. ..... Minneapolis
*Morrissey, F. B. ..... St. Paul
Morrow, J. J. ..... Austin
Morse, M. P. ..... Le Roy
Morse, R. W. ..... Minneapolis
Morsman, L. W. ..... Hibbing
Mosby, M. E. ..... Long Prairie
Moses, Joseph, Jr. ..... Northfield
Moses, R. R. ..... Kenyon
†Mouritsen, G. J. ..... Fergus Falls
‡Mousel, L. H. ..... Rochester
Mueller, R. F. ..... Two Harbors
Mueller, Selma C. ..... Duluth
‡Muir, W. F. ..... Graceville
Muller, R. T. ..... St. Paul
‡Mulligan, A. M. ..... Brainerd
Muthauf, C. J. ..... Rochester
‡Murphy, E. P. ..... Minneapolis
Murphy, I. J. ..... Minneapolis
‡Murphy, J. E. ..... Marshall
Murphy, J. T. ..... Rochester
Murphy, M. E. ..... Rochester
Murray, N. A. ..... Rochester
‡Murray, R. A. ..... Rochester
‡Murray, R. A. ..... Aitkin
‡Musachio, N. F. ..... Foley
‡Musgrove, J. E. ..... Rochester
Mussey, Mary E. ..... Rochester
Mussey, R. D. ..... Rochester
Mussey, Robert D. ..... Rochester
‡Musty, N. J. ..... Minneapolis
Myers, J. A. ..... Minneapolis
Myre, C. R. ..... Paynesville

‡Naegeli, A. E. ..... St. Paul
Naegeli, Frank ..... Fergus Falls
Nagel, H. D. ..... Waconia
‡Naslund, A. W. ..... Minneapolis
*Nass, H. A. ..... Mabel
‡Nauth, B. S. ..... Winona
Nay, R. M. ..... Rochester
‡Neal, J. M. ..... Minneapolis
‡Neale, R. M. ..... Rochester
Nealy, D. E. ..... Adrian
Neary, R. P. ..... Minneapolis
‡Neel, H. B. ..... Albert Lea
Neff, W. S. ..... Virginia
Nehring, J. P. ..... Preston
Nelson, E. H. ..... Chisholm
Nelson, E. J. ..... Owatonna
Nelson, E. N. ..... Minneapolis
Nelson, H. E. ..... Crookston
†Nelson, H. S. ..... Excelsior
‡Nelson, K. L. ..... Montgomery
Nelson, L. A. ..... St. Paul
‡Nelson, L. M. ..... Minneapolis
‡Nelson, L. S. ..... Hibbing
‡Nelson, M. C. ..... Minneapolis
Nelson, M. S. ..... Granite Falls
Nelson, N. H. ..... Minneapolis
Nelson, N. P. ..... Brainerd
‡Nelson, O. L. N. ..... Minneapolis
‡Nelson, R. A. ..... Fergus Falls
‡Nelson, R. L. ..... Duluth
‡Nelson, W. I. ..... Minneapolis
Nelson, W. O. B. ..... Fergus Falls
‡Nesheim, M. O. ..... Emmons
Nessa, C. B. ..... St. Cloud
Nester, H. D. ..... Rochester
‡Neumaier, Arthur ..... Glencoe
Neumann, C. A. ..... Winona
New, G. B. ..... Rochester
‡Newell, F. W. ..... St. Paul
Newhart, Horace ..... Minneapolis
Nichols, A. E. ..... St. Paul
Nichols, D. R. ..... Rochester
Nicholson, M. A. ..... Duluth
‡Nickel, W. R. ..... Rochester
‡Nielsen, A. M. ..... Northfield
Nilson, H. J. ..... North Mankato
Ninneman, N. N. ..... Waconia
Nissen, A. S. ..... St. Peter
Noble, J. F. ..... St. Paul
‡Noble, J. L. ..... St. Paul
Nolan, D. E. ..... Dayton, Ohio
‡Noonan, W. J. ..... Minneapolis
Norberg, C. E. ..... Cloquet
Nordin, G. T. ..... Minneapolis
Nordland, Martin ..... Minneapolis
Nordman, W. F. ..... Mora
Norman, J. F. ..... Crookston
Norris, N. T. ..... Caledonia
Northrup, W. F., Jr. ..... Rochester
Noth, H. W. ..... Minneapolis
Notier, V. A. ..... Rochester
Novak, E. E. ..... New Prague
‡Nuebel, C. J. ..... St. Paul
Nuessle, W. G. ..... Springfield
Nuetzman, A. W. ..... Faribault
Nutting, R. E. ..... Duluth
Nydahl, M. J. ..... Minneapolis
Nye, Katherine A. ..... St. Paul

Nye, Lillian L. ..... St. Paul
Nygren, W. T. ..... Braham
Nylander, E. G. ..... Minneapolis
Nystrom, Ruth G. ..... Minneapolis

Oberg, C. M. ..... Minneapolis
†O'Brien, W. A. ..... Minneapolis
‡O'Brien, W. M. ..... St. Paul
Ochsner, C. G. ..... Wabasha
O'Connor, D. C. ..... Eden Valley
O'Connor, L. J. ..... St. Paul
Odel, H. M. ..... Rochester
O'Donnell, D. M. ..... Ortonville
O'Donnell, J. E. ..... Minneapolis
Oeljen, S. C. G. ..... Waseca
Oerting, Harry ..... St. Paul
‡Ogden, Warner ..... St. Paul
Ohage, Justus, Jr. ..... St. Paul
O'Hanlon, J. A. ..... Lindstrom
‡Olds, G. H. ..... Waseca
‡O'Leary, J. H. ..... Staples
O'Leary, P. A. ..... Rochester
Oliver, C. I. ..... Graceville
Oliver, I. L. ..... Graceville
Olmanson, E. G. ..... St. Peter
Olsen, A. M. ..... Rochester
‡Olsen, E. G. ..... Minneapolis
‡Olsen, R. L. ..... St. Paul
Olson, A. C. ..... Minneapolis
Olson, A. E. ..... Duluth
Olson, A. O. ..... Duluth
Olson, C. A. ..... St. Paul
‡Olson, C. J. ..... Belle Plaine
Olson, D. C. ..... Gaylord
Olson, E. A. ..... Pine Island
Olson, F. A. ..... Los Angeles, Calif.
‡Olson, G. E. ..... West Concord
Olson, J. D. ..... Rochester
‡Olson, L. M. ..... Chisago City
Olson, O. A. ..... Minneapolis
†Olson, R. G. ..... Minneapolis
‡Olson, S. W. ..... Rochester
Onsgard, L. K. ..... Houston
Oppegaard, C. L. ..... Crookston
Oppegaard, M. O. ..... Crookston
Oppen, E. G. ..... Minneapolis
O'Reilley, B. E. ..... St. Paul
Ostergren, E. W. ..... St. Paul
Otto, H. C. ..... Frazee
Ouellette, A. J. ..... St. Paul
Ould, C. L. ..... San Francisco, Calif.
Owens, A. H., Jr. ..... Rochester
‡Owens, W. A. ..... Montevideo
†Owre, Oscar ..... Minneapolis

Padgett, H. O. ..... Rochester
Page, R. L. ..... St. Charles
‡Paine, J. R. ..... Minneapolis
‡Palen, B. J. ..... Minneapolis
Palmer, C. F. ..... Albert Lea
Palmer, H. A. ..... Blackduck
Palmer, W. L. ..... Albert Lea
‡Palmerton, E. S. ..... Albert Lea
‡Pankratz, P. J. ..... Mountain Lake
*Paradis, W. G. ..... Crookston
†Parker, O. W. ..... Ely
Parker, R. L. ..... Rochester
Parker, W. H. ..... Chisholm
Parkhill, Edith M. ..... Rochester
‡Parson, E. I. ..... Duluth
Parson, L. R. ..... Elbow Lake
Parson, Lillian B. ..... Elbow Lake
Parsons, J. G. ..... Crookston
Parsons, R. L. ..... Monterey
Pasek, A. W. ..... Cloquet
Passer, A. A. ..... Olivia
‡Patch, O. B. ..... Duluth
‡Patterson, H. D. ..... Anoka
‡Patterson, S. A. ..... Duluth
Patterson, W. E. ..... Minneapolis
Patterson, W. L. ..... Fergus Falls
‡Pattison, D. H. ..... Rochester
‡Paulson, E. C. ..... Elbow Lake
‡Paulson, D. L. ..... Rochester
Paulson, J. A. ..... Rochester
Paulson, T. S. ..... Fergus Falls
Payne, J. H. ..... Rochester
Pearsall, R. P. ..... Virginia
Pearson, B. F. ..... Shakopee
Pearson, D. J. ..... Rochester
Pearson, F. R. ..... St. Paul
Pearson, L. O. ..... Warroad
Pearson, M. M. ..... St. Paul
Peck, L. D. ..... Hastings
Peck, L. R. ..... Hastings
Pedersen, A. H. ..... St. Paul
Pedersen, R. C. ..... Duluth
‡Pedersen, R. M. ..... Minneapolis
Pemberton, J. de[illegible] ..... Rochester
‡Pender, J. W. ..... Rochester
Penhall, F. W. ..... Morton
Penk, E. L. ..... Springfield
Penn, G. E. ..... Mankato
Penn'e, D. F. ..... Duluth
‡Pennington, R. E. ..... Rochester
Peppard, T. A. ..... Minneapolis
‡Perlman, E. C. ..... Minneapolis
Perry, C. G. ..... St. Paul
‡Perry, T. T. ..... Rochester
Person, J. P. ..... Alden
Pertl, A. L. ..... Canby
Peters, G. A. ..... Rochester
Petersen, J. R. ..... Minneapolis
Petersen, M. C. ..... Rochester
Petersen, P. C. ..... Braham
‡Petersen, R. T. ..... Minneapolis
†Petersen, Thorvald ..... Minneapolis
Peterson, C. A. ..... Chisago City
‡Peterson, D. B. ..... St. Paul
Peterson, E. N. ..... Virginia
Peterson, H. O. ..... St. Paul
‡Peterson, H. W. ..... Minneapolis
‡Peterson, J. H. ..... Duluth
Peterson, J. L. E. ..... St. Paul
Peterson, N. P. ..... Minneapolis
Peterson, O. H. ..... Minneapolis
Peterson, O. L. ..... Cokato
Peterson, P. E. ..... Minneapolis
Peterson, V. N. ..... St. Paul
Peterson, W. C. ..... Minneapolis
‡Peterson, W. G. ..... Rochester
Peterson, W. H. ..... Minneapolis
Petit, L. J. ..... Minneapolis
Petkevich, F. M. ..... Red Lake Falls
Petrahorg, H. T. ..... Aitkin
‡Pewters, J. T. ..... Minneapolis
Peyton, W. T. ..... Minneanolis
Pfuetze, K. H. ..... Cannon Falls
Pfunder, M. C. ..... Minneapolis
‡Phalen, G. S. ..... Rochester
Phelps, K. A. ..... Minneapolis
Phillips, A. E. ..... Delano
Phillips, W. H. ..... Jordan
Pierce, C. H. ..... Wadena
Pierson, R. F. ..... Slayton
P'per, M. C. ..... Rochester
Piper, W. A. ..... Mountain Lake
Platou, E. S. ..... Minneapolis
‡Plimpton, N. C., Jr. ..... Rochester
Plondke, F. J. ..... St. Paul
Plowman, E. T. ..... Marble
Plummer, W. A. ..... Rochester
Pogue, R. E. ..... Watertown
‡Pohl, J. F. ..... Minneapolis
Poirier, J. A. ..... Forest Lake
‡Pollard, D. W. ..... Minneapolis
Polley, H. F. ..... Rochester
Pollock, D. K. ..... Minneapolis
Pollock, L. W. ..... Rochester
‡Polmeteer, F. E. ..... Rochester
Polzak, J. A. ..... Minneapolis
‡Ponterio, J. E. ..... Shakopee
Pool, T. L. ..... Rochester
Poore, J. C. ..... Isle
Popovich, S. J. ..... Rochester
Popp, W. C. ..... Rochester
Poppe, F. H. ..... Minneapolis
‡Potek, David ..... International Falls
Potter, R. B. ..... Minneapolis
Potthoff, C. J. ..... Minneapolis
Power, J. E. ..... Duluth
Powers, F. H. ..... Rochester
Prangen, A. D. ..... Rochester
Pratt, F. J. ..... Minneapolis
Pratt, J. H., Jr. ..... Rochester
Preine, I. A. ..... Minneapolis
Prendergast, H. I. ..... St. Paul
‡Preston, F. W. ..... Rochester
Preston, L. F. ..... Rochester
Preston, P. J. ..... Minneapolis
Prickman, L. E. ..... Rochester
‡Priest, R. E. ..... Minneapolis
‡Priestley, J. T. ..... Rochester
Prim, J. A. ..... Minneapolis
‡Prins, L. R. ..... Albert Lea
‡Proeschel, R. K. ..... Willmar
Proffit, W. E. ..... Minneapolis
Proshek, C. E. ..... Minneapolis
Proudfit, C. H. ..... Rochester
Pruitt, R. D. ..... Rochester
Pugh, D. G. ..... Rochester
Purves, G. H. ..... Lake Benton
Puumala, R. H. ..... Cloquet

Quanstrom, V. F. ..... Brainerd
Quattlebaum, Frank ..... Rochester
‡Quello, R. O. B. ..... Minneapolis
†Quinby, T. F. ..... Minneapolis
Quist, H. W. ..... Minneapolis

Raadquist, C. S. ..... Hibbing
Radabaugh, R. C. ..... Hastings
Radcliffe, James, Jr. ..... Rochester
Rademaker, William ..... Ely
Raetz, S. J. ..... Maple Lake
Raihala, John ..... Virginia
Raiter, R. F. ..... Cloquet
‡Ramsey, R. M. ..... St. Paul
†Ramsey, W. R. ..... St. Paul
Randall, A. M. ..... Ashby
Randall, L. M. ..... Rochester
Ransom, M. L. ..... Hancock
Rasmussen, R. C. ..... St. Paul
‡Rasmussen, W. C. ..... Rochester
Raszkowski, H. J. ..... Rochester
†Ratcliffe, J. J. ..... Aitkin
Rathbun, C. A. ..... St. Cloud
Raymond, J. H. ..... Canby
‡Rea, C. E. ..... St. Paul
Reed, C. A. ..... Minneapolis
Reeve, E. A. T. ..... Elbow Lake
Reff, A. R. ..... Crookston
Regan, J. M. ..... Rochester
Regnier, E. A. ..... Minneapolis
Reichelderfer, C. F. ..... Staples
‡Reif, H. J. ..... St. Paul
†Reineke, G. F. ..... New Ulm
†Reiter, H. W. ..... Shakopee
Rempel, D. D. ..... Lester Prairie
Replogle, W. H. ..... Wabasha
‡Rewbridge, A. G. ..... Minneapolis
Reynolds, J. S. ..... Minneapolis
Rice, C. O. ..... Minneapolis
†Rice, H. G. ..... Moorhead
Rice, H. R. ..... Roseau
Richards, E. T. F. ..... St. Paul
Richards, W. B. ..... St. Cloud
‡Richardson, F. S. ..... Minneapolis
Richardson, H. E. ..... St. Paul
‡Richardson, R. J. ..... Rushford
Richardson, W. E. ..... Rushford
Richdorf, L. F. ..... Minneapolis
‡Rick, P. F. W. ..... St. Paul
Ridgway, A. M. ..... Annandale
Rieke, W. W. ..... Wayzata
Rigler, L. G. ..... Minneapolis
Rimer, E. W. ..... Breckenridge
Rinehart, R. E. ..... Rochester
Ringle, O. F. ..... Walker
‡Rinkey, Eugene ..... Redwood Falls
Ripple, R. J. ..... New London
Risch, R. E. ..... Minneapolis
Risser, A. F. ..... Stewartville
‡Ritchie, W. P. ..... St. Paul
Ritt, A. E. ..... St. Paul
Rivers, A. B. ..... Rochester
Rives, H. F. ..... Rochester
‡Rizer, D. K. ..... Minneapolis
Rizer, R. I. ..... Minneapolis
Roan, C. M. ..... Minneapolis
Robb, E. F. ..... Minneapolis
Robbins, C. P. ..... Winona
Robbins, O. F. ..... Minneapolis
‡Roberts, L. I. ..... Minneapolis
‡Roberts, O. W. ..... Owatonna
‡Roberts, S. W. ..... Minneapolis
Roberts, W. B. ..... Minneapolis
Robertson, H. E. ..... Rochester
†Robertson, J. B. ..... Minneapolis
Robertson, P. A. ..... Austin
Robilliard, C. M. ..... Faribault
Robinson, F. J. ..... Rochester
†Robinson, J. M. ..... Corning, N. Y.
Robitshek, E. C. ..... Minneapolis
Robson, J. T. ..... Rochester
Rochford, W. E. ..... Minneapolis
Rodda, F. C. ..... Minneapolis
Roehlke, A. B. ..... Elk River
‡Roemer, H. J. ..... Winona
Rogers, C. W. ..... Heron Lake
‡Rogers, J. D. ..... Rochester
Rogers, S. F. ..... St. Paul
‡Rogne, W. G. ..... Spring Grove
Roholt, C. L. ..... Waverly
Rohrer, C. A. ..... Waterville
Rokala, H. E. ..... Virginia
Rolig, D. H. ..... Howard Lake
Rood, D. C. ..... Duluth
Rose, J. T. ..... Lakefield
Rosenbladt, Louis ..... St. Paul
‡Rosenfield, A. B. ..... Hibbing
‡Rosenholtz, B. I. ..... St. Paul
Rosenow, E. C. ..... Rochester
Rosenow, J. H. ..... Rochester
‡Rosenthal, F. H. ..... Grand Meadow
Rosenthal, Robert ..... St. Paul
Rosenwald, R. M. ..... Minneapolis
Roskilly, G. C. P. ..... Minneapolis
‡Ross, A. J. ..... Minneapolis
‡Rossen, R. X. ..... Hastings
‡Roth, F. D. ..... Lewiston
Roth, G. C. ..... St. Paul
Roth, R. R. ..... Rochester
*Rothrock, J. L. ..... St. Paul
Rothschild, H. J. ..... St. Paul
Roust, H. A. ..... Montevideo
Rousuck, A. A. ..... Rochester
Rowe, O. W. ..... Duluth
Rowe, W. H. ..... Fairmont
Rowland, W. D. ..... Rochester
Rowles, E. K. ..... Coleraine
Roy, P. C. ..... St. Paul
Rucker, C. W. ..... Rochester
Rucker, W. H. ..... Minneapolis
Rud, N. E. ..... Minneapolis
Rudell, G. L. ..... Minneapolis
‡Rudie, P. S. ..... Duluth

‡Ruggles, G. M.....Forest Lake
Ruhberg, G. N.....St. Paul
‡Rulison, E. T., Jr.....Rochester
‡Rumpf, C. W.....Faribault
†Rumpf, W. H.....Faribault
Rushton, J. G.....Rochester
Russ, F. H.....Rochester
Russ, H. H.....Blue Earth
‡Russeth, A. N.....Minneapolis
Rusten, E. M.....Minneapolis
Rutherford, W. C.....St. Paul
Rutledge, L. H.....Detroit Lakes
Ryan, B. F.....Rochester
Ryan, J. D.....Milaca
Ryan, J. J.....St. Paul
‡Ryan, J. M.....St. Paul
Ryan, M. E.....St. Paul
Ryan, W. J.....Duluth
Rydburg, W. C.....Brooten
Rynearson, E. H.....Rochester

‡Sach-Rowitz, Alvan.....Moose Lake
‡Sadler, W. P., Jr.....Minneapolis
Saffert, C. A.....New Ulm
Sahr, W. G.....Hutchinson
‡St. Cyr, K. J.....Osseo
‡Saliterman, B. I.....Minneapolis
Salt, C. G.....Minneapolis
Salter, R. A.....Virginia
‡Samson, E. R.....Stillwater
‡Samuelson, L. G.....Mankato
Samuelson, Samuel.....Minneapolis
Sandell, S. T.....Oak Terrace
Sanderson, E. T.....Minneota
‡Sandt, K. E.....Minneapolis
Sandven, N. O.....Paynesville
Sanford, A. H.....Rochester
Sanford, J. A.....Farmington
Sarff, O. E.....Virginia
‡Sarnecki, M. M.....St. Paul
Satersmoen, Theodore...Pelican Rapids
Sather, Allen.....Fosston
Sather, E. R.....Alexandria
‡Sather, G. A.....Fosston
‡Sather, R. N.....McIntosh
‡Sather, R. O.....Crookston
Satterlee, H. W.....Lewiston
Satterlund, V. L.....St. Paul
Sauer, W. G.....Rochester
Savage, F. J.....St. Paul
Sawatzky, W. A.....Minneapolis
Sax, S. G.....Duluth
‡Sayre, G. P.....Rochester
‡Scales, J. R.....Rochester
Schaaf, F. H. K.....Minneapolis
Schade, F. L.....Worthington
Schaefer, J. F.....Owatonna
Schaefer, Samuel.....Winona
Schaefer, W. G.....Minneapolis
‡Schamber, W. F.....Parkers Prairie
Schatz, F. J.....St. Cloud
Scheetz, R. J.....Rochester
Scheifley, C. H.....Rochester
†Scheldrup, N. H.....Minneapolis
Scherer, C. A.....Duluth
Scherer, L. R.....Minneapolis
Schiele, B. C.....Minneapolis
Schimelpfenig, G. T.....Chaska
‡Schleinitz, F. B.....Battle Lake
Schlesselman, G. H.....Anoka
Schlesselman, J. T.....Mankato
‡Schlicke, C. P.....Rochester
†Schmidt, A. F.....Minneapolis
‡Schmidt, G. F.....Minneapolis
‡Schmidt, H. W.....Rochester
Schmidt, P. A.....Good Thunder
Schmidt, P. G., Jr.....Granite Falls
‡Schmidt, W. R.....Worthington
Schmidtke, R. L.....St. Paul
‡Schmitt, G. F., Jr.....Rochester
†Schmitt, S. C.....Los Angeles, Calif.
Schmitz, A. A.....Mankato
Schmitz, E. J.....Holdingford
Schmitz, R. L.....Rochester
‡Schneider, H. H.....Rochester
†Schneider, J. P.....Minneapolis
Schneider, P. J.....Adams
Schneidman. N. R.....Minneanolis
Schoch, R. B. J.....St. Paul
Scholpp, O. W.....Hutchinson
Scholten, R. A.....Rochester
Schons, Edward.....St. Paul
Schottler, G. J.....Dexter
Schottler, M. E.....Minneapolis
Schroder, C. H.....Duluth
‡Schroeckenstein, H. F.....St. Paul
Schroeppel, J. E.....Winthrop
Schuldt, F. C.....St. Paul
Schultz, J. A.....Albert Lea
‡Schultz, P. J.....Minneapolis
Schulze, A. G.....St. Paul
‡Schulze, W. M.....Swanville
†Schussler, O. F.....Minneapolis
Schutz, E. S.....Mountain Lake
Schwartz, V. J.....Minneapolis
Schweiger, T. R.....Hibbing

*Schwyzer, Arnold .....St. Paul
†Schwyzer, Gustav.....Minneapolis
‡Schwyzer, H. C.....St. Paul
Scofield, C. L.....Benson
Scott, E. E.....St. Paul
†Scott, F. H.....Minneapolis
Scott, H. G.....Minneapolis
‡Sealy, W. B.....Rochester
†Seashore, Gilbert .....Minneapolis
‡Seashore, R. T.....Duluth
Seefeld, P. H.....Rochester
Seham, Max.....Minneapolis
Seifert, M. H.....Excelsior
Seifert, O. J.....New Ulm
Seitz, S. B.....Barnesville
Seldon, T. H.....Rochester
‡Seljeskog, S. R.....Minneapolis
‡Sellers, G. K.....Dassel
Selmo, J. D.....Norwood
Selvig, H. S.....Alexandria
Sengpiel, G. W.....Rochester
†Senkler, G. E.....St. Paul
Senn, E. W.....Owatonna
Serkland, J. C.....Rothsay
Sessions, J. C.....Minneapolis
Sether, A. F.....Ruthton
Setzer, H. J.....St. Paul
Seybold, W. D.....Rochester
Shaleen, A. W.....Hallock
Shandorf, J. F.....Minneapolis
Shands, H. C.....Rochester
Shannon, S. S.....Ironton
Shannon, W. R.....St. Paul
Shaperman, Eva P.....Minneapolis
Shapiro, E. Z.....Duluth
Shapiro, M. J.....Minneapolis
Sharp, D. V.....Minneapolis
‡Sharpe, W. S.....Rochester
Shastid, T. H.....Duluth
Shaw, A. W.....Virginia
‡Shaw, H. A.....Lake Park
Shedlov, Abraham.....Fosston
Sheedy, C. L.....Austin
‡Shelden, J. T.....Rochester
Shelden, W. D.....Rochester
†Shellman, J. L.....St. Paul
‡Shepard, V. D.....Rochester
Sheppard, C. G.....Hutchinson
*Sheppard, Fred .....Burien, Wash.
†Sheppard, P. E.....Hutchinson
Sher, D. A.....Virginia
Sheridan, R. B., Jr.....Rochester
Sherman, C. H.....Stillwater
Sherman, C. L.....Luverne
Sherman. R. V.....Red Wing
Sherwood, G. E.....Kimball
Shick, R. M.....Rochester
‡Shima, G. J.....Sleepy Eye
‡Shimonek, S. W.....St. Paul
Shonyo, E. S.....Rochester
‡Short, Jacob .....St. Paul
†Shrader, J. S.....Springfield
Shullenberger, C. C.....Rochester
‡Sidell, C. M.....Rochester
Sidell, R. H.....Rochester
Siegel, Clarence .....Oak Terrace
Siegel, J. S.....Virginia
Siegmann, W. C.....Minneapolis
Silver, Henry.....Sebeka
Silver, J. D.....Minneapolis
Simison, Carl.....Barnesville
Simons, B. H.....Chaska
Simons, E. T.....Swanville
Simons, J. H.....Minneapolis
‡Simons, L. T.....St. Paul
‡Simons, S. J.....Akeley
‡Simonson, D. B.....Minneapolis
‡Simonton, K. M.....Rochester
Simpson. E. D.....Minneapolis
Sinamark. Andrew.....Hibbing
Singer, B. J.....St. Paul
‡Sinykin, M. B.....Minneapolis
Siperstein, D. M.....Minneapolis
Sisler, C. E.....Grand Rapids
†Sivertsen, Andrew...Van Nuys, Calif.
Sivertsen, Ivar.....Minneapolis
‡Siostrom. L. E.....Storden
‡Skaug, H. M.....Chatfield
Skinner, H. O.....St. Paul
Skjold, A. C.....Minneapolis
Slater, S. A.....Worthington
‡Sloan, Julius.....Minneapolis
Slocumb, C. H.....Rochester
Sluder, F. S., Jr.....Rochester
Smalley, R. E.....Rochester
Smisek, E. A.....St. Paul
‡Smisek, F. M. E.....Minneapolis
Smith, A. E.....Minneapolis
Smith, Adam M.....Minneapolis
Smith, Archie M.....Minneapolis
Smith, B. A.....Crosby
Smith, C. M.....Duluth
Smith, F. D.....Rochester
‡Smith, F. H.....Rochester
Smith, F. L.....Rochester
‡Smith, G. G.....Fulda
Smith, H. L.....Rochester

Smith, H. R.....Minneapolis
‡Smith, L. A.....Balaton
‡Smith, L. A.....Rochester
Smith, L. G.....Montevideo
Smith, Margaret I.....Minneapolis
Smith, M. W.....Red Wing
Smith, N. D.....Rochester
Smith, N. M.....Minneapolis
Smith, V. D. E.....St. Paul
Smith, W. R.....Grand Marais
‡Snell, A. M.....Rochester
Snider, G. G.....Rochester
Snyder, G. W.....St. Paul
‡Snyker, O. E.....Ely
Soderlind, R. T.....Minneapolis
Sogge, L. L.....Windom
Sohlberg, O. I.....St. Paul
Sohmer, A. E.....Mankato
Solhaug, S. B.....Minneapolis
Solsem, F. N.....Spicer
Sommer, A. W.....Elmore
Sommers, Ben.....St. Paul
‡Sonnesyn, N. N.....Le Sueur
‡Sorem, M. B.....St. Paul
Sorum, F. T.....Jasper
Souster, B. B.....St. Paul
Spang, A. J.....Duluth
Spang, J. S.....Duluth
‡Spano, J. P.....Minneapolis
Spar, A. A.....Rochester
‡Sperling, Louis.....Minneapolis
Spicer, F. W.....Duluth
Spink, W. W.....Minneapolis
‡Spittler, R. O.....New Richland
Sprafka, J. M.....St. Paul
Sprague, R. G.....Rochester
Spratt, C. N.....Minneapolis
Spurbeck, R. G.....Cloquet
Spurzem, R. J.....Anoka
‡Stafford, C. E.....Baudette
Stanford, C. E.....Minneapolis
Stangl, P. E.....St. Cloud
Stanley, C. R.....Worthington
Stark, F. M.....Rochester
Starekow, M. D.....Thief River Falls
‡Stebbins, T. L.....Minneapolis
Steffens, L. A.....Red Wing
Stein, K. E.....Lakeville
Stein, R. J.....Pierz
‡Steinberg, C. L.....St. Paul
Steiner, I. W.....Winona
Stelter, L. A.....Minneapolis
‡Stemsrud, H. L.....Alexandria
Stenstrom, Annette E. T...Minneapolis
Stephan, E. L.....Hinckley
Sterner, E. G.....St. Paul
Sterner, E. R.....St. Paul
Sterner, O. W.....St. Paul
Stevens, John.....Gonvick
Stevenson, B. M.....Fulda
Stevenson, F. W.....Faribault
Stewart, Alexander.....St. Paul
*Stewart, A. B.....Owatonna
‡Stewart, D. E.....Grand Rapids
‡Stewart, N E...Ft. Leonard Wood, Mo.
Stewart, R. I.....Minneapolis
Stickney, J. M.....Rochester
Stillwell, W. C.....Mankato
Stilwell, G. G.....Rochester
Stinnette, S. E.....St. Paul
Stocking, F. F.....Hallock
Stolpestad. A. H.....St. Paul
‡Stolpestad, H. L.....St. Paul
†Stomel, Joseph...Los Angeles, Calif.
Stotler, J. F.....Rochester
‡Stout, H. A.....Rochester
‡Stover, Lee.....Rochester
†Strachauer, A. C.....Minneapolis
*Strand, E. V.....Bayport
‡Stransky, T. W.....Owatonna
Strate, G. E.....St. Paul
Strathern, C. S.....St. Peter
Strathern, F. P.....St. Peter
Strathern, M. L.....Gilbert
‡Stratte, A. K.....Pine City
Stratte, H. C.....Windom
‡Straus, M. L.....St. Paul
‡Street, Bernard.....St. Cloud
Strobel, W. G.....Duluth
Stroebel, C. F., Jr.....Rochester
‡Strom, G. W.....Rochester
‡Stromgren, D. T.....Minneapolis
Strout, G. E.....Minneapolis
Strunk, C. A.....Minneapolis
Stuart, A. B.....Cloquet
Studer, D. J.....Faribault
Stuhler, L. G.....Rochester
Stuhr, J. W.....Stillwater
Sturre, J. R.....Minneapolis
Stuurmans. S. H.....Minneapolis
Sullivan, R. M.....Minneapolis
‡Sullivan, R. R.....Minneapolis
Sundt, Mathias.....Minneapolis
†Sutherland, C. G.....Rochester
Sutherland, H. N.....Ely
*Sutton, C. S.....St. Cloud
Sutton, H. R.....Hoffman

Sutton, Janet B.....Grand Rapids
‡Svien, H. J.....Rochester
*Swanson, Cephas.....Minneapolis
Swanson, J. A.....St. Paul
‡Swanson, P. E.....Virginia
Swanson, R. E.....Minneapolis
Swanson, R. R.....Albert Lea
Swedburg, W. A.....Duluth
‡Swedenburg, P. A.....Swanville
Sweeney, A. R., Jr...San Diego, Calif.
‡Sweetser, H. B., Jr.....Minneapolis
†Sweetser, H. B., Sr.....Minneapolis
Sweetser, T. H.....Minneapolis
Sweitzer, S. E.....Minneapolis
†Swendseen, C. G.....Minneapolis
Swendson, J. J.....St. Paul
Swensen, R. G.....North Branch
‡Swenson, A. O.....Duluth
Swenson, O. J.....Waseca
Swezey, B. F.....Buffalo
‡Sybilrud, H. W.....Bricelyn

Tangen, G. M.....Minneapolis
Tanquist, E. J.....Alexandria
Taylor, C. W.....Duluth
Taylor, E. S.....Worthington
‡Taylor, J. C.....Rochester
Taylor, J. H.....Minneapolis
Teisberg, C. B.....St. Paul
‡Teisberg, J. E.....Middle River
Telford, V. J.....Litchfield
Terrell, B. J.....Nopeming
Tesch, G. H.....Elk River
Thabes, J. A.....Brainerd
Thabes, J. A., Jr.....Brainerd
‡Thayer, E. A.....Truman
Thielen, R. D.....St. Michael
Thomas, G. E.....Minneapolis
Thomas, G. H.....Minneapolis
Thomas, H. R.....Rochester
Thomas, J. F.....Rochester
*Thompson, Albert .....St. James
Thompson, Arthur.....Cokato
‡Thompson, C. O.....Hendricks
‡Thompson, F. A.....St. Paul
‡Thompson, G. J.....Rochester
Thompson, H. B.....Fergus Falls
Thompson, W. H.....Minneapolis
*Thoreson, M. O.....South St. Paul
Thornell, W. C.....Rochester
‡Thysell, D. M.....Minneapolis
Thysell, F. A.....Moorhead
Thysell, V. D.....Hawley
‡Tibhetts, M. H.....Duluth
Tice, G. I.....Rochester
Tice, W. A.....Rochester
‡Tifft, C. R.....St. Paul
Tilderquist, D. L.....Duluth
‡Tillisch, J. H.....Rochester
*Tinker, C. W.....Stewart
Tingdale, A. C.....Minneapolis
Tingdale, Carlyle.....Hibbing
Tinney, W. S., Jr.....Rochester
Todd, Ramona L.....Minneapolis
Tofte, Josephine B.....Minneapolis
Tompkins, S. F.....Rochester
Torgerson, W. B.....Oklee
Tosseland, N. E.....Rochester
Townsend, De Wayne.Philadelphia, Pa.
Tracht, R. R.....St. Paul
Traeger, C. A.....Faribault
‡Travis, J. S.....St. Paul
Traxler, J. F.....Henderson
Tregilgas, H. R.....So. St. Paul
Treusch, J. V.....Rochester
‡Trimingham, H. G. L.....Rochester
Trommald, Gladys.....Minneapolis
‡Troost, H. B.....Mankato
‡Trow, J. E.....Minneapolis
Trueman, H. S.....Minneapolis
Trutna, T. J.....Silver Lake
‡Trytten, E. G.....Middle River
‡Tudor, R. B.....Hibbing
Tunstead, H. J.....Minneapolis
‡Tuohy, E. B.....Rochester
Tuohy, E. L.....Duluth
Turnacliff, D. D.....Minneapolis
Turner, T. R.....Rochester
Tweedy, G. J.....Winona
‡Tweedy, J. A.....Rochester
Tweedy, R. B.....Winona
‡Twyman, R. A.....Rochester

Ude, W. H.....Minneapolis
Uhley, C. G.....Crookston
Uihlein, Alfred.....Rochester
Ulrich, H. L.....Minneapolis
‡Underdahl, L. O.....Rochester
Undine, C. A.....Minneapols
Urhan, D. A.....Rochester
‡Urherg, S. E.....Duluth

Vaaler, Torvald.....Cannon Falls
Vadheim, A. L.....Tyler
Vadheim, J. L.....Burien, Wash.
‡Vail, J. B.....Henning
Valentine, W. H.....Tracy
‡Van Demark, R. E.....Rochester
‡Vandersluis, C. W.....Bemidji
Van Meter, Henry.....Stillwater
‡Van Valkenberg, J. D.....Floodwood
Vaughan, V. M.....Truman
‡Vaughn, L. D.....Rochester
Veirs, D. M.....St. Paul
Veirs, Ruhy J. S.....St. Paul
Venables, A. E.....St. Paul
Veranth, L. A.....St. Cloud
Vercellini, C. H. E.....Duluth
Vezina, J. C.....Mapleton
Vickers, P. M.....Rochester
Vik, A. E.....Minneapolis
Vik, Melvin.....Onamia
‡Virnig, M. P.....Wells
‡Vogel, H. A. L.....New Ulm
Vogel, J. H.....New Ulm
Von der Weyer, W. H.....St. Paul

Waas, C. W.....St. Paul
Wadd, C. T.....Janesville
Wagener, H. P.....Rochester
‡Wahlberg, E. W.....Sleepy Eye
Wahlquist, H. F.....Minneapolis
Wakefield, E. G.....Rochester
Walch, A. E.....Minneapolis
Waldron, C. W.....Minneapolis
Walfred, K. A.....St. Cloud
†Walker, A. E.....Duluth
‡Walker, A. E.....St. Paul
*Walker, G. H.....Winona
Wall, C. R.....Minneapolis
Wallace, G. T.....Rochester
Wallace, M. O.....Duluth
Waller, J. D.....Wilmont
‡Walsh, F. M.....St. Paul
‡Walsh, M. N.....Rochester
‡Walsh, W. T.....Minneapolis
‡Walter, C. W.....St. Paul
Walters, G. F.....Richland, Wash.
‡Walters, Waltman.....Rochester
Wangensteen, O. H.....Minneapolis
†Wanous, E. Z.....Minneapolis
*Ward, A. W.....Minneapolis
Ward, B. H.....Rochester
Ward, P. A.....Minneapolis
Warner, J. J.....Perham
Warnock, R. W.....St. Paul
‡Warren, C. A.....St. Paul
Warren, F. S.....Washington, D. C.
‡Wasson, L. F.....Alexandria
†Watkins, C. H.....Rochester
Watkins, D. H.....Rochester
Watson, A. M.....Royalton
Watson, C. J.....Minneapolis
†Watson, J. D.....Minnapolis
Watson, P. T.....Bemidji
‡Watson, S. W.....Royalton
‡Watson, W. J.....Holdingford
Watz, C. E.....St. Paul
Waugh, J. M.....Rochester
Weaver, M. M.....Minneapolis
Weaver, P. H.....Farihault
Webb, R. C.....Minneapolis
*Wehber, E. E.....Duluth
Webber, F. L.....St. Paul
Weber, H. M.....Rochester
‡Webster, L. J.....Battle Lake
Weir, J. F.....Rochester
‡Weis, B. A.....St. Paul
Weisberg, Maurice.....St. Paul
‡Weisel, Wilson .....Rochester
Weiser, G. B.....New Ulm
‡Weisman, S. A.....Minneapolis
‡Weismann, R. E.....Rochester
‡Wellman T. G.....Lake City
Wellner, T. O.....Rochester
Wells, A. H.....Duluth
‡Wells, G. R.....Rochester
‡Wells, W. B.....Jackson
Wenner, W. T.....St. Cloud
Wentworth. A. J.....Mankato
‡Wenzel, G. P.....St. Paul
Werner. O. S.....Cambridge
West, Catherine C.....Minneapolis
Westby, Magnus.....Madison
Westby, Nels.....Madison
†Westerman, A. E.....Montgomery
Westerman, F. C.....Montgomery
Wethall, A. G.....Minneapolis
Wetherby, Macnider.....Minneapolis
Weum, T. W.....Minneapolis
‡Wheeler, D. W.....Duluth
Wheeler, M. W.....St. Paul
‡Whitacre, J. C.....St. Paul
‡White, A. A.....Minneapolis
‡White, J. D.....Rochester
‡White, R. R., III.....Rochester
White, S. M.....Minneapolis
White, W. D.....Minneapolis
Whitesell, L. A.....Minneapolis
‡Whitehouse, F. R.....Rochester
Whitlock, G. F.....Rochester
Whitmore, F. W.....St. Paul
‡Whitney, R. A.....Cambridge
Whitson, S. A.....Albert Lea
Whittemore, D. D.....Bemidji
‡Widen, W. F.....Minneapolis
‡Wiechman, F. H.....Montgomery
Wilcox, A. E.....Minneapolis
‡Wildehush, F. F.....Minneapolis
Wilder, K. W.....Minneapolis
‡Wilder, R. L.....Minneapolis
Wilder, R. M.....Rochester
Wilder, R. M., Jr.....Rochester
Wilken, P. A.....Minneapolis
Wilkinson, Stella L.....Moose Lake
Wilkowske, R. J.....Owatonna
Will, C. B.....Bertha
Will, W. W.....Bertha
†Willcutt, C. E.....Minneapolis
Williams, A. B.....St. Paul
Williams, C. A.....Pipestone
Williams, C. K.....St. Paul
‡Williams, J. A.....Hibbing
Williams, H. L., Jr.....Rochester
Williams, H. O.....Lake Crystal
Williams, J. A.....St. Paul
Williams, L. A.....Slayton
Williams, M. R.....Cannon Falls
Williams, R. V.....Chicago, Ill.
Williams, Robert.....Minneapolis
‡Williamson, G. A.....St. Paul
Willius, F. A.....Rochester
Willson, D. M.....Rochester
‡Wilmot, C. A.....Litchfield
Wilmot, H. E.....Litchfield
Wilson, C. E.....Blue Earth
‡Wilson, G. T.....Rochester
Wilson, H. T.....Rochester
‡Wilson, I. H.....Worthington
‡Wilson, J. A.....St. Paul
Wilson, J. V.....St. Paul
‡Wilson, K. G.....Rochester
*Wilson, L. B.....Rochester
Wilson, R. H.....Winona
Wilson, V. O.....Minneapolis
Wilson, W. E.....Northfield
†Wilson, W. F.....Lake City
Winer, L. H.....Minneapolis
‡Wingquist, C. G.....Crosby
Winnick, J. B.....St. Paul
Winter, I. F.....Rochester
Winter, J. A.....Duluth
Winther, Nora M. C.....Minneapolis
‡Wipperman, F. F.....Minneapolis
Witham, C. A.....Minneapolis
Withrow, M. E.....International Falls
Wittich, F. W.....Minneapolis
Wohlrahe, A. A.....Minneapolis
Wohlrahe, C. F.....No. Mankato
Wohlrahe, E. J.....Springfield
Wold, K. C.....St. Paul
Wolf, W. W.....Minneapolis
‡Wolfe, H. H.....St. Paul
Wolff, H. J.....St. Paul
‡Wolkoff, H. J.....St. Paul
Wollaeger, E. E.....Rochester
Wolner, O. H.....St. Peter
‡Wolstan, S. D.....Minneota
Woltman, H. W. F.....Rochester
Wood, H. G.....Rochester
Wood, W. D.....Rochester
‡Wood, W. W., Jr.....Rochester
Woodruff, C. W.....Chatfield
*Woodworth, Elizabeth A...Minneapolis
Workman, W. G.....Tracy
Wozencraft, J. P.....Rochester
Wray, W. E.....Campbell
†Wright, C. D.....Minneapolis
†Wright, C. O.....Luverne
Wright, S. G.....Minneapolis
Wright, W. S.....Minneapolis
Wulf, R. F.....Rochester
Wunder, H. E.....Shakopee
Wyatt, O. S.....Minneapolis
Wynne, H. M. N.....Minneapolis

Yaeger, W. W.....Marshall
‡Yeager, C. L.....Rochester
Ylvisaker, R. S.....Minneapolis
Yoerg, O. W.....Minneapolis
Young, B. B.....Duluth
Young, H. H.....Rochester
Young, T. O.....Duluth
‡Younger, L. I.....Winona
Youngren, E. R.....St. Paul

Zachman, A. H.....Melrose
‡Zachman, L. L.....St. Paul
*Zaworski, E. A.....Minneapolis
Zeman, E. W.....Hibbing
‡Zemke, E. E.....Fairmont
Zierold, A A.....Minneapolis
Zimmermann, H. B.....St. Paul
Zinter, F. A.....Minneapolis
‡Ziskin, Thomas.....Minneapolis
Zlatovski, M. L.....Duluth
Zuschlag, Ella .....Rochester

1+1=1

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level tablespoonful of Pablum (or Pabena) when mixed with . . .	tablespoonful of milk, formula or water (hot or cold) makes . . .	rounded tablespoonful of cereal feeding of average consistency.

To make thicker feeding (as in pylorospasm, pyloric stenosis, etc.), increase the amount of Pablum or Pabena. To make thinner feeding, as in 3-months infants, increase amount of milk, formula or water.

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✦ Reports and Announcements ✦

MEDICAL BROADCAST FOR MAY

The following radio schedule of talks on medical and dental subjects by William A. O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, Minnesota Hospital Association and University of Minnesota School of the Air:

May 3—11:00 a.m.	(WLB)	Common Cold
May 6— 9:15 a.m.	(WCCO)	School Health Education
May 6—11:30 a.m.	(KROC-WLB)	Medicine in the News
May 10—11:00 a.m.	(WLB)	Tuberculosis
May 13— 9:15 a.m.	(WCCO)	School Health Examination
May 13—11:30 a.m.	(KROC-WLB)	Medicine in the News
May 17—11:00 a.m.	(WLB)	Rheumatic Fever
May 20— 9:15 a.m.	(WCCO)	School Mental Hygiene
May 20—11:30 a.m.	(KROC-WLB)	Medicine in the News
May 24—11:00 a.m.	(WLB)	Eye Disorders
May 27— 9:15 a.m.	(WCCO)	School Oral Hygiene
May 27—11:30 a.m.	(KROC-WLB)	Medicine in the News
May 29— 4:30 p.m.	(WCCO)	Your Hospital in Wartime, The Cost of Caring for the Sick
May 31—11:00 a.m.	(WLB)	Hearing Problems

Every Friday evening at 7:00 p.m. during the spring quarter there is a thirty-minute medical presentation over station WLB by Dr. O'Brien and associates.

BARUCH COMMITTEE ON PHYSICAL MEDICINE

Interested in the subject of physical therapy because of the interest taken in the subject by his physician father, Dr. Simon Baruch, at the College of Physicians and Surgeons, New York, and in view of the probable need for physical therapy in a large way in the rehabilitation of wounded soldiers, Mr. Bernard M. Baruch last fall appointed a committee headed by Dr. Ray Lyman Wilbur to investigate the subject and to make recommendations. The gist of the report of the committee was to the effect that the therapeutic benefits of physiotherapy in general have not been utilized to the extent to which they are entitled, that there is a need for physicians trained in physiotherapy for both teaching and practice and that there is a need for extensive research in physical therapy.

As a result of this committee's investigation and report, Mr. Baruch has donated the sum of $1,100.00 to be under the supervision of an Administrative Board with Dr. Wilbur as chairman and Dr. Frank Krusen, director. Headquarters will be at 597 Madison Avenue, New York.

The College of Physicians and Surgeons, New York, has been granted $400,000 for the establishment of a research and teaching center. The New York University College of Medicine has been granted $250,000, and the Medical College of Virginia $250,000. To selected medical schools, $100,000 has been allocated for the development of facilities for the physical rehabilitation of war casualties and those injured in industry. Another $100,000 has been appropriated for the establishment of fellowships and residencies for the training of physicians and other scientists in this field.

This generous donation should aid materially in the development of this field of therapeutics which has doubtless been neglected by the profession, although there exist organizations such as the American Physiotherapy Association and the American Association of Occupational Therapy, which devote themselves to this therapeutic specialty. It should be stated that the Baruch Committee will avoid duplication of the physiotherapy program being sponsored by the National Foundation for Infantile Paralysis at the University of Pennsylvania Medical School for poliomyelitis victims.

MINNESOTA HOSPITAL SERVICE ASSOCIATION

At the annual meeting of the Minnesota Hospital Service Association in February, Dr. W. W. Will of Bertha was elected to serve for a three-year period as trustee of the Minnesota Hospital Service Association. Dr. Will has at various times served on committees representing the medical profession in its relationship to the Blue Cross Plans.

The report of the Executive Director, Arthur M. Calvin, showed that during the year, 1943, 65,174 Blue Cross subscribers were hospitalized for which the Association paid out $1,940,600 or 83.6 per cent of its earned income during the year. The Association has at the present time approximately 570,000 subscribers and a liquid reserve of $677,610 for contingencies. One hundred fourteen hospitals in Minnesota are now participating in the plan and several others have made application for affiliation.

The following officers were elected to serve for the ensuing year:

President—Mr. S. W. Pinkerton, Vice President, West Publishing Company and trustee of St. Luke's Hospital, Saint Paul.
Vice President—Mr. Harold Langland, Secretary-Treasurer, Stanley Iron Works, Minneapolis.
Secretary—Dr. Peter Ward, Administrator, Miller Hospital, Saint Paul.
Treasurer—Mr. A. A. McRae, Chairman of Board, Fourth Northwestern National Bank and trustee of Fairview Hospital, Minneapolis.
Assistant Treasurer—Mr. C. M. Jorgensen, President, Fourth Northwestern National Bank, Minneapolis.

THE GEHRMANN LECTURES

Dr. Harold S. Diehl, dean of the medical sciences, University of Minnesota Medical School, Minneapolis, will deliver the Gehrmann Lectures for 1943-44 at the University of Illinois College of Medicine May 17-19. His first lecture will be devoted to the cause and epidemiology of the common cold and the second to its prevention and treatment. The third lecture will be entitled "Some Recent American Epidemics."

"CONSULT YOUR OTOLOGIST OR EAR DOCTOR..."

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HERE'S HOW

There are cases in which deficient hearing is caused by a progressive disease and any hearing aid may do harm by giving a false sense of security. Therefore, we recommend that you consult your otologist or ear doctor to make sure that your hearing deficiency is the type that can be benefited by the use of a hearing aid.

HERE'S WHY



A HEARING AID for every person who needs one—that is the goal of Zenith's Crusade to Lower the Cost of Hearing. But Zenith will never offer its new Radionic Hearing Aid as a substitute for medical care of hearing deficiencies.

The Zenith Hearing Aid is, rather, a long-needed accessory in the therapy of impaired hearing—an accessory high in quality yet low in price. It is an efficient *radionic* means of improving defective hearing which cannot otherwise be corrected by medical science. And this hearing aid is priced to put it within reach of all who need it.

In keeping with our policy of cooperation with the medical profession, every Zenith advertisement pertinently warns of the danger of purchasing a hearing aid without knowing the cause of the hearing impairment—emphasizes that the otologist and physician are the only authorities on the ear. Zenith-franchised optical outlets urge any person who requests an audiometer test to consult his physician or otologist for examination.

Zenith-franchised optical outlets sell but one Zenith model (no "decoys")—one quality: Zenith's best!—at one price: $40. No salesman calls at the home. The hard of hearing are never pressed to buy. They test the performance of the instrument themselves—listen at their leisure in the Zenith-franchised optical establishment—then let their own ears decide.

In this spirit, with these policies, Zenith presents its new Radionic Hearing Aid at a price all can afford. The cooperation of physicians and otologists is essential in helping us put this instrument into the hands of every American man, woman and child who needs it!

$40 Ready to Wear

New Zenith Radionic Hearing Aid. Complete with Radionic Tubes, Crystal Microphone, Magnetic Earphone and Batteries. One model—no "decoys" . . . One price: $40 . . . One quality: Zenith's best! Covered by o Liberol Guarontee.

Special Booklets for Physicians

Today, write for your copy of a special booklet which we have prepared to answer your questions about the new Zenith Radionic Hearing Aid.

• • •

IMPORTANT ZENITH FEATURES. New Four-Position Outside Tone Control . . . Special Battery-Saver Circuit . . . Easily Accessible, Adjustable Volume Control... New Type Magnetic Earphone . . . Zenith Automatic Volume Control.

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Mrs. F. S. McKinney, *President*
Minneapolis, Minnesota
Mrs. W. H. Rucker, *Editor*
Minneapolis, Minnesota

CONVENTION NEWS

The preconvention board meeting was held at the Mayo Foundation House, Rochester, Minnesota, April 13, 1944, with about fifty members in attendance. Guest at this meeting and throughout the convention was Mrs. Eben Carey of Wauwatosa, Wisconsin, president of the auxiliary to the American Medical Association.

Mrs. F. S. McKinney, state president, called for reports from officers and chairmen and then urged county presidents attending to bring their problems, if any, before the group for counsel.

Members were very happy to welcome a delegate from Southwestern territory, which has had difficulty in meeting because of travel curtailment.

Several members from larger counties spoke with feeling about the trials of the smaller counties in these difficult times and urged that each doctor's wife be an auxiliary herself, in representing the medical profession in her clubs and organizations.

A delightful luncheon in the ballroom of the Foundation House followed, after which the women reluctantly left to dress for the tea which was held in the same room later in the afternoon and was open to all members.

On Friday, April 14, the annual meeting was held at the Rochester Country Club. In spite of pouring rain about two hundred women attended the annual luncheon.

Mrs. McKinney opened the meeting and introduced the national president, Mrs. Eben Carey, and the spokesman for the hostesses, Mrs. J. de J. Pemberton of Rochester. Reports of officers and committee chairmen were made and placed on file by the historian.

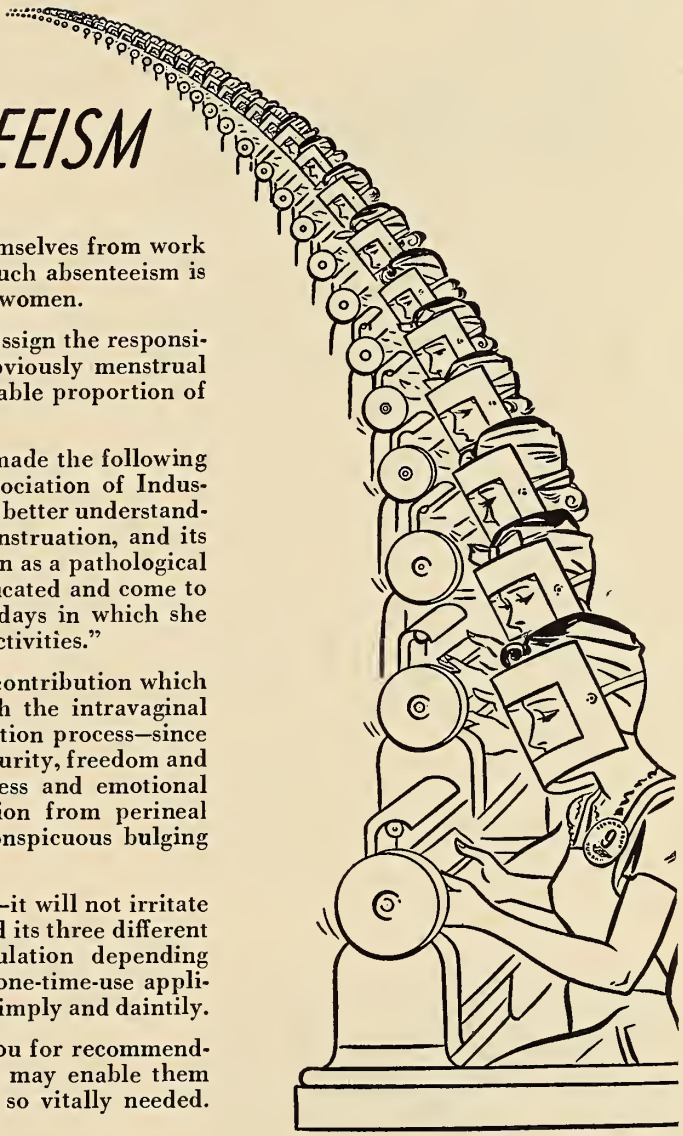
The reports of county presidents followed. The year's projects were: cadet nurse requirement, collection of medical and surgical relief supplies, the making of dressings for Our Lady of Good Counsel cancer hospital in Saint Paul, the dissemination of cancer-control information, the placing of *Hygiea* in schools and clubs and a thorough study of the Wagner-Murray-Dingell Bill. The counties, regardless of size, had all taken an active part in these projects.

Nine women were honored at the memorial services: Mmes. Charles H. Mayo, Rochester; Arthur Sweeney, Saint Paul; W. S. Cuff, Saint Paul; R. M. Pederson, Minneapolis; A. E. Anderson, Minneapolis; J. W. Bell, Sr., Minneapolis; Willis Thompson, Minneapolis; John Hawkinson, Upper Mississippi Auxiliary, and A. E. Amundson, Little Falls.

The afternoon program consisted of an inspiring talk by Mrs. Carey and a skit, "Rationed Fashions," by the Rochester women and presentation of the new state president, Mrs. Anthony Bianco of Duluth.

OBJECTIVE

REDUCTION OF FEMALE ABSENTEEISM



Statistics show that women absent themselves from work much more often than men; indeed, such absenteeism is said to be 50 per cent[1] higher among women.

Though available data do not clearly assign the responsibility for this marked differential, obviously menstrual inconveniences account for a considerable proportion of the days lost.

On this point Pommerenke[2] recently made the following observation before the American Association of Industrial Physicians and Surgeons: "With a better understanding of the purpose and nature of menstruation, and its recognition as physiological rather than as a pathological process, many a woman may be re-educated and come to regard the so-called difficult days as days in which she need not seriously curtail her usual activities."

Many physicians have discovered the contribution which *improved menstrual hygiene* (as with the intravaginal tampon Tampax) affords this reeducation process—since it provides such a welcome sense of security, freedom and poise by relieving the physical distress and emotional uncertainty caused by vulval irritation from perineal pads, or from olfactory offense, or conspicuous bulging under slacks or coveralls.

Tampax can be used easily and safely—it will not irritate delicate tissues nor block the flow. And its three different absorbencies permit individual regulation depending upon daily needs. Compressed into a one-time-use applicator, it may be inserted and removed simply and daintily.

Your patients should be grateful to you for recommending Tampax—and (in many cases) it may enable them to stay "on the job" where they are so vitally needed.

(1) Mod. Med., 11:130, 1943; (2) Ind. Med., 12:512, 1943

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Mercurochrome (H. W. & D Brand of dibrom-oxymercuri-fluorescein-sodium) is economical because stock solutions may be dispensed quickly and at low cost by the physician or in the dispensary. Stock solutions keep indefinitely. Literature furnished to physicians on request.



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On Saturday morning, the members gathered at the home of Mrs. M. S. Henderson where she with Mrs. D. C. Balfour were hostesses for morning coffee and last-minute greetings and farewells.

Sincere thanks are extended to the women of Olmsted-Houston-Fillmore-Dodge County Auxiliary for their untiring effort to make the convention in Rochester a pleasant one. Especial thanks to Mrs. J. M. Waugh, chairman of arrangements, and to Mrs. J. de J. Pemberton and Mrs. G. B. Eusterman, her co-chairmen.

U. S. CADET NURSE CORPS

To stimulate interest in professional nursing, Congress has made it possible for the U. S. Public Health Service, Federal Security Agency, to provide all-expense scholarships and allowances for qualified candidates in accredited schools of nursing meeting requirements of the Bolton Act. The new program is designed to relieve the serious nursing shortage caused by wartime demand. Students enrolling under the plan are members of the U. S. Cadet Nurse Corps.

At least 65,000 new student nurses must join the U. S. Cadet Nurse Corps at once. These students will form a reserve to replace the thousands of nurses being called into the armed services, and the critical shortages in civilian and Government hospitals, health agencies, and war industries.

Young women between the ages of seventeen or eighteen (depending on State and school regulations) and thirty-five, who are graduates of an accredited high school with satisfactory grades, and in good health, may qualify to become members of the U. S. Cadet Nurse Corps. An increasing number of nursing schools are enrolling married students.

Information about *all* accredited nursing schools may be secured at *all* local hospitals, or by writing U. S. Cadet Nurse Corps, Box 88, New York, N. Y.

WEASEL WORDS

We hear and read much about "democratic processes," and coming from certain sources, such expressions may be catalogued as "weasel words" when used in connection with current appeals for pending legislation to permit citizens in military service to express by ballot during 1944 their views on political questions.

By contrast to this implied freedom for millions of voters in uniform, we stress the fate of physicians and dentists in uniform:

There are 60,000 doctors and dentists serving our boys on every sea and on every battlefield of the world, but they have been forbidden to write their representatives in Congress on the Wagner-Murray-Dingell Bill because "Military personnel will not engage in any political activity while in the military service." Even students now in schools and finishing their medical education have been issued like orders. We are glad to know that this so-called health bill is recognized as "political activity," but we question the propriety of forbidding these thousands of professional citizens in the armed forces the right to express their views as to their own professional future, while the gentlemen of the Public Health Service are permitted to travel around in their uniforms and speak for this "political activity." Are the proponents afraid of an expression of opinion from the medical staffs of the army and navy?—WALTER F. DICKINSON, Secretary, Pennsylvania State Medical Society.

In Memoriam

RUDOLPH M. GUNDERSON

Dr. R. M. Gunderson of Lake Park, Minnesota, died on April 2, 1944, at the age of sixty-four, following a heart attack.

Dr. Gunderson was born at Coon Valley, Wisconsin, July 3, 1879. He attended public schools at Stephen, Minnesota, and graduated from the Hamline University Medical School in Saint Paul, in 1907. He began practice at Stephen in 1907, but in 1911 moved to Minneapolis. In 1913 he became established in Lake Park, Minnesota, where he acted as local surgeon for the Northern Pacific Railroad, in addition to his private practice. Dr. Gunderson was a member of the local Shrine, was a member of Clay-Becker County Medical Society, Minnesota State and American Medical Associations.

Dr. Gunderson is survived by his wife and a daughter, Mrs. Albert L. Haman, Jr., of Saint Paul.

ANDREA HALL

Dr. Andrea Hall of Virginia, Minnesota, died during her sleep January 14, 1944, at the age of seventy-two.

Dr. Hall was born in Bodo, Norway, July 26, 1871. She came to the United States at the age of fifteen and obtained her medical degree from the University of Minnesota Medical School in 1897. After taking postgraduate work at the Children's Memorial Hospital, Chicago, and the Chicago Lying-In Hospital, she practiced for a short time in Hudson, Wisconsin. In 1903 she married and moved to Virginia, Minnesota. Later she was divorced. During World War I she accepted a position as company doctor for the Virginia and Rainy Lake Lumber Company at Cusson, Minnesota. Later she returned to Virginia where she practiced until the time of her death, and in the last few months of her life was assistant city health officer. She was a member of the St. Louis County Medical Society, Minnesota State and American Medical Associations.

Dr. Hall is survived by a daughter, Mrs. John R. Howes of Minneapolis, and a brother, Christopher Ellingson of Kloten, North Dakota.

HILDUS AUGUSTIN NASS

Dr. H. A. Nass, a physician in Mabel, Minnesota, for forty-six years, died March 27, 1944, at the age of seventy-two.

Dr. Nass was born in Frankville, Iowa, January 8, 1872, and attended Luther College, Decorah, Iowa, for five years. He received his medical degree from the University of Iowa Medical School, Iowa City, in 1898. He located the same year at Mabel, Minnesota, and has practiced there since that time.

Dr. Nass was a member of the Olmsted-Houston-

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Fillmore-Dodge County Medical Society, Minnesota State, and American Medical Associations.

There are no surviving relatives.

ARTHUR D. WHITING

Dr. A. D. Whiting, an eye, ear, nose, and throat specialist in Saint Cloud since 1897, died suddenly March 19, 1944, at the age of seventy-three.

Dr. Whiting was born in Northfield, Minnesota, October 24, 1872. He attended the grade schools at Northfield and then attended Carleton College. In 1894, he graduated from the Dental College of the University of Minnesota and a year later from the College of Physicians and Surgeons of Minneapolis. He interned at Saint Mary's Hospital in Minneapolis.

After taking postgraduate work in eye, ear, nose, and throat in New York City, he located at Saint Cloud in 1897.

Dr. Whiting married Grace Twitchell of Minneapolis, who died September 30, 1925. On July 3, 1930, he married Amy Goedker. His widow and a son, Dr. L. D. Whiting, a dentist of Fargo, North Dakota, survive.

Remember this—that there is a proper dignity and proportion to be observed in the performance of every act of life.—MARCUS AURELIUS.

Of General Interest

Dr. Arthur Neumaier of Glencoe, who enlisted in the Coast Guard, left for active duty in April.

* * *

Dr. A. R. Blakey of Osakis is the new president-elect of the Park Region Medical Society.

* * *

Dr. O. A. Kabrick recently moved from Grandview, Iowa, to Jackson, Minnesota, where he will be associated in the practice of medicine with Dr. W. H. Halloran.

* * *

Dr. John Esser of Perham at a recent meeting of the village council was elected chairman of the Board of Health and village physician.

* * *

Dr. O. L. McHaffie, Duluth, has been appointed chief surgeon for the Mesabi division of the Duluth, Mesabi and Iron Range Railway Company. He succeeds the late Dr. Edward E. Webber in this capacity.

* * *

Dr. S. A. Slater was recently presented with a gold wrist watch at a meeting of the Minnesota Public Health Association in recognition of his six years of service as president of the Association.

* * *

Dr. Hugh Thompson Carmichael, former fellow in the Mayo Foundation, has received the appointment of associate professor of psychiatry at the University of Illinois College of Medicine.

* * *

Dr. C. W. Jacobson, formerly of Thief River Falls, has moved to Breckenridge, where he will carry on the practice of Dr. Leo McMahon, who is awaiting call for Navy duty as Lieutenant Commander.

* * *

Dr. Arthur J. Henderson, physician at Kiester since 1920, was granted an assignment as medical officer at the Veterans Administration Facility, Minneapolis, in March, and is now established in his new position.

* * *

Heron Lake Hospital Association is the name of the newly incorporated hospital administration taking over the former Southwestern Minnesota Hospital at Heron Lake. The Board of Trustees is headed by Dr. A. G. Chadbourn.

* * *

Captain J. E. Haes, formerly of Vernon Center, has been given a presidential citation as a member of an air transport command group in the China area. Captain Haes went overseas last September and served in India before going to China.

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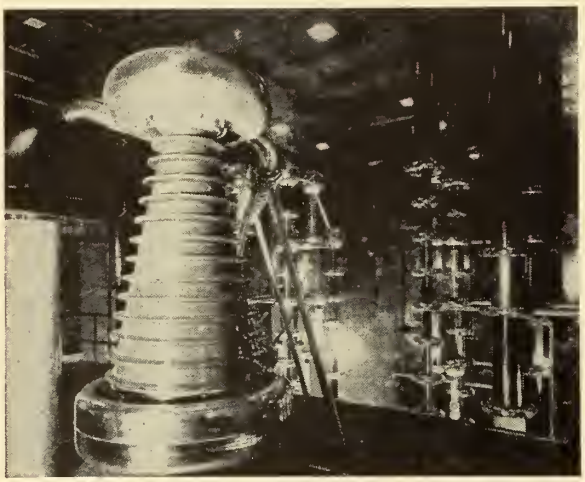
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Attention is called by the Office of the Collector of Internal Revenue, Saint Paul, that all registrants under the Harrison Narcotic Law must fill out Form 678 within thirty days following change of office location. Registration is for a specific location.

* * *

Dr. D. H. Dewey has been elected chief of staff of the Owatonna City Hospital, succeeding Dr. J. F. Schaefer. Dr. Dewey has been affiliated with the hospital for the past fourteen years. Elected as assistant chief of staff was Dr. D. E. Morehead, with Dr. E. J. Nelson as secretary.

* * *

Dr. C. W. Moberg of Detroit Lakes will continue to serve his community as physician instead of going into the military service as he had expected to do, by action of the induction board. He was formally relieved from military call because of the great need for a physician in Detroit Lakes and Lake Park.

* * *

Dr. Daniel A. MacDonald is the newly elected president of the Minneapolis Surgical Society, succeeding Dr. H. O. McPheeters. He will take office in October. Dr. Robert McGandy was elected vice president, Dr. Ernest R. Anderson, recording secretary, Dr. Orwood J. Campbell, treasurer, and Dr. Thomas J. Kinsella, member of the Council.

* * *

Dr. C. F. Carstens, for thirty-four years a practicing physician in Minnesota, thirty of which have been in Hibbing, was recently honored in being named the eighth man to become a member of the VFW hall of fame at Hibbing. Dr. Carstens was a member of the staff of Rood Hospital, serving four years in Keewatin, before moving to his present location in Hibbing.

* * *

Definite plans are now being made for the erection of a Community Hospital at Princeton, Minnesota, Articles of Incorporation having been adopted at a meeting held in the Princeton Armory in April. The hospital will be a charitable institution financed through funds solicited from members of the community and others interested in the health project.

* * *

Dr. Ralph Knight has been appointed supervisor of anesthesia at the Asbury Hospital in Minneapolis. Dr. Knight, who is professor of anesthesia at the University of Minnesota, or his associate, Dr. Baird, spend one morning each week supervising the anesthetists at Asbury Hospital, where they are also available as consulting anesthetists for individual patients when needed.

* * *

Four members of the Minnesota State Medical Association, who had completed fifty years or more of medical practice in the state, were honored at the annual banquet of the Association in Rochester, April 14, when they were presented with lapel pins signifying membership in the "Fifty Club." Those so honored



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were: Dr. E. H. Boleyn, Stillwater; Dr. O. H. Hegge, Austin; Dr. C. P. Robbins, Winona, and Dr. George E. Sherwood, Kimball.

* * *

Dr. Charles Sherd of Rochester was elected president of the Minnesota Academy of Science at the twelfth annual meeting held at the University of Minnesota, April 22. Other new officers include: Dr. John E. Anderson, University of Minnesota, vice president and Sister Magna Werth, College of St. Benedict, St. Joseph, Minnesota, counselor. John W. Moore, University of Minnesota, was re-elected secretary-treasurer.

* * *

Full page advertisements warning against the dangers of political medicine as threatened by the Murray-Wagner-Dingell Bill have been appearing in the *Stillwater Weekly Gazette* and the *Forest Lake Times,* sponsored by the members of the Washington County Medical Society, the dentists in the county, the Stillwater Nurses Club, the druggists of the county and the Lakeview Memorial Hospital. Here is an example of active interprofessional cooperation in the interest of medical practice.

* * *

New methods developed by the national naval medical center at Bethesda, Maryland, employing ultra-rapid color cameras for observation of the brain in certain types of head injuries were explained and demonstrated at a meeting of the Hennepin County Medical Society at its April meeting by Lieutenant Charles Hunter Shelden. Lieutenant Shelden, son of Dr. Walter D. Shelden of the Mayo Clinic, Rochester, spent seven years in neuro-surgery at Rochester before entering the Navy. The color films which Dr. Shelden presented have been shown in but four medical centers —Minneapolis, University of Minnesota, Rochester and Chicago.

* * *

Dr. Frank J. Hill, North Dakota state health officer, will leave Bismarck June 1 to assume his duties in Minneapolis as successor to Dr. F. E. Harrington in the office of city health commissioner. Dr. Harrington will retire on June 19. Dr. Hill, who has held his post in North Dakota since November, 1940, was appointed Minneapolis commissioner by the Board of Public Welfare at a meeting held on April 27.



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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

INDUSTRIAL OPHTHALMOLOGY. Hedwig S. Kuhn, M.D., Hammond, Indiana. 294 pages. Illus. Price, $6.50, cloth. St. Louis: C. V. Mosby Co., 1944.

SYNOPOSIS OF NEUROPSYCHIATRY. Lowell S. Selling, Sc.M., M.D., Ph.D., Dr.P.H. Director Psychopathic Clinic, Recorders Court, Detroit; Associate Attending Neuropsychiatrist, Eloise Hospital; Adjunct Attending Neuropsychiatrist, Harper Hospital. 500 pages. Price, $5.00, cloth. St. Louis: C. V. Mosby Co., 1944.

SYNOPSIS OF DISEASE OF THE HEART AND ARTERIES. Third Edition. George R. Herrmann, M.S., M.D., Ph.D., F.A.C.P. Professor of Medicine, University of Texas; Director of the Cardiovascular Service, John Sealy Hospital; Consultant in Vascular Diseases, U. S. Marine Hospital. 516 pages. Illus. Price, $5.00, cloth. St. Louis: C. V. Mosby Co., 1944.

SYNOPSIS OF OBSTETRICS. Jennings C. Litzenberg, B.Sc., M.D., F.A.C.S. Professor Emeritus of Obstetrics and Gynecology, University of Minnesota Medical School, Minneapolis. 405 pages. 2nd ed. St. Louis: C. V. Mosby Co., 1943.

This is a small, concise volume, outlining all the pertinent knowledge to date concerning pregnancy and allied states, including the physiology and pathology of the fetus. Because it is a synopsis, it is necessarily in outline form, and the author does not enlarge upon the various conditions discussed. More detailed discussions must therefore be used in association with a book of this type.

There are many good illustrations and diagrams taken from various modern works on obstetrics and gynecology. The mechanisms of normal and abnormal labor are well illustrated. The various pathologic conditions encountered during pregnancy are all briefly discussed, including the various toxemias of pregnancy. Contracted pelvis, with good diagrams, is discussed in one chapter and the newer methods of pelvimetry and classifications of pelves are outlined.

This is a handy reference book for medical students and busy practitioners.

SELMA C. MUELLER, M.D.

SURGICAL ERRORS AND SAFEGUARDS. By Max Thorek. 4th Ed. 1,085 pages. Illus. Price $15.00. Philadelphia: J. B. Lippincott Co., 1943.

For those having done surgery over a period of years such a volume stirs reminiscence if not an occasional shudder. So long as surgery is done there will be a percentage of error. Surgeons are human, and perfection is not a human quality. Perfection may be sought but is never attained. To point out pitfalls or show how to clear the way to surgical successes is a mission Dr. Thorek has set himself. In



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reality he has written a textbook. He has had a rich experience and has contributed a great deal to the building of better surgery in our generation.

One should read the author's cautions concerning catheterization, ligating of varicose veins, conduct of cure for undescended testis or on obliteration of the gall bladder. Transfer of communicable diseases by transfusion is given space, and the whole discussion on transfusion deserves attention. He discusses the timely diagnostic puncture for empyema; the right and wrong way to restore viscera through an abdominal incision. He gives helpful hints on pile surgery and outlines the chief dangers of splenectomy, also the various accidents incident to renal surgery. These are clear, concise and informative. This quality is characteristic of his descriptions throughout the book. There is a thoroughgoing and informative chapter on hernia.

The volume is profusely illustrated and many unusual pathologic conditions are depicted. It is full of practical points and is worthy of a place in any surgeon's library.

ARTHUR N. COLLINS, M.D.

THE MODERN MANAGEMENT OF COLITIS. J. Arnold Bargen, M.D., Chief of the Section on Intestinal Diseases, Mayo Clinic. 322 pages, 146 figures. Price, $7.00. Springfield, Illinois: Charles C. Thomas, 1943.

This monograph begins with a discussion of the anatomy and physiology of the right and left colon. The second chapter is on the "irritable colon" erroneously termed "colitis," frequently conditioned by heredity and neurogenic factors, and precipitated by various factors including laxatives, systemic diseases, et cetera. He then classifies colitis into nine types with a chapter describing the pathology, symptomatology, and treatment of each type. These are as follows:

Type 1.—"Thrombo-ulcerative colitis" usually termed "chronic ulcerative colitis," constitutes over 50 per cent of 1573 consecutive cases of ulcerative colitis seen at the Mayo Clinic. It starts in the rectum and spreads

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diffusely upward. It is a hematogenous infection of the intestinal wall with multiple capillary thromboses, infarction of the overlying mucosa, abscess formation and finally ulceration of the intestinal mucosa. He presents a strong argument for a specific diplococcus as the etiologic factor in this type and discusses at length the technique of identifying it.

Type 2.—Chronic ulcerative colitis, regional or segmental in distribution, involves the colon above the rectum and sigmoid, demonstrable by x-ray but not by sigmoidoscopic examination.

Type 3.—Chronic ulcerative colitis is similar to type 2 except that it can be reached with the procto-sigmoidoscope. Types 2 and 3 are due to probable multiple and uncertain causes.

Type 4.—Tuberculous ulcerative colitis, usually associated with tuberculosis elsewhere, has characteristic ulcers tending to girdle the bowel and is divided roughly into three subtypes, ulcerative, hyperplastic and sclerotic.

Type 5.—Amœbic ulcerative colitis, caused by the endamœbic histolytica, with a widely variable symptomatology and the formation of discrete ulcers. This type responds very well to a standardized treatment using emetine hydrochloride, treparsol and vioform in combination.

Type 6.—"Colitis" in which the rectal and sigmoid mucosa is hyperemic without real ulcers but with a characteristic "feathery" mucosal margin by x-ray and presumably part of a syndrome of dietary insufficiency.

Type 7.—Ulcerative colitis caused by the virus of venereal lymphogranuloma involving the rectum and lower sigmoid only.

Type 8.—"Allergic colitis" in which reaction of the mucosa to allergens is either a primary or modifying factor.

Type 9.—Ulcerative colitis which is a late phase of bacillary dysentery with a positive serological agglutination of the organisms of the Shigella paradysenterial group.

The last chapter deals with differential diagnosis of ulcerative colitis.

This book is a bold and direct attack upon the problem of a logical and practical classification of conditions known as "colitis." Whatever revisions future editions may bring, this book will remain a valuable contribution to medical literature.

L. L. Merriman, M.D.

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 June, 1944 Number 6

MANPOWER PROBLEMS IN THE PROFESSIONAL FIELDS

DRENG BJORNARAA

State War Manpower Director for Minnesota

Saint Paul, Minnesota

THE War Manpower Commission has two main operating arms in the field of professional occupations. These two arms are (1) the National Roster of Scientific and Specialized Personnel and (2) the Procurement and Assignment Service for physicians, dentists, veterinarians, sanitary engineers, and nurses. You are all familiar with the Procurement and Assignment Service since you have all no doubt taken part in its operations. However, the National Roster of Scientific and Specialized Personnel which, for obvious reasons, I will henceforth call the National Roster, does not touch the medical profession except in that it does include related professions such as Bacteriologists, Anatomists, Physiologists, and Biologists.

The National Roster is a division of the Bureau of Placement of the War Manpower Commission and is responsible for the recruitment, allocation and placement on a nationwide basis of scientific and specialized civilians with professional qualifications. The coöperative procedure between the National Roster and the United States Employment Service of the War Manpower Commission has been developed in order to make the facilities of the National Roster available to local employment offices in filling jobs for which the National Roster has records of qualified applicants, and to assist the National Roster in placing its facilities at the disposal of persons making application for employment to the United States Employment Service.

The coöperative procedure is applicable when the local office for instance, here in Saint Paul, receives an order for a person in a classification included in the National Roster's occupational fields. If the St. Paul office cannot find a person with the qualifications locally, the order is sent to other offices in the State, or other states, through our State Office. The moment that order reaches our State Office it is automatically referred to the National Roster for attention. The National Roster maintains a punch-card system of records for all persons registered, so, as soon as the order is received, these cards are run through machines to sort out the cards which are punched to indicate the same or similar qualifications as those indicated on the order. The qualifications, work records, and other information on persons having the correct qualifications are then mailed directly to the Saint Paul office for selection by the employer.

Similarly, when an applicant having the qualifications necessary for occupations included in the National Roster appears at a local United States Employment Service office and it appears that he cannot be placed locally in a job at which he can use his professional skill, he is then asked to submit his qualifications to the National Roster and thus be made available for job openings nationally.

I have thus far not touched on manpower problems in the professional fields but have outlined

Presented at the County Officers Meeting conducted by the Minnesota State Medical Association, Saint Paul, Minnesota, February 26, 1944.

for you the operations of one of War Manpower Commission's methods of recruiting and allocating manpower in the professional field. The fact that manpower problems and shortages exist in the professional fields is evidenced by the fact that thirty-three of the fifty-five major occupational groups in the National Roster are also on the list of Critical Occupations of the War Manpower Commission and any person in these occupations is given special consideration not only by the War Manpower Commission but also under policies of the Selective Service System.

The program of the War Manpower Commission is designed in such a way that the employment of and transfer from job to job of persons in professional fields are controlled by voluntary controls established by management-labor committees and committees made up of local professional people. As I have said before, you are all familiar with the Procurement and Assignment Service which on the national level, like the National Roster, is also in the Bureau of Placement of the War Manpower Commission. However, as you know, on the local level the Procurement and Assignment Service is made up of committees of local professional people unlike the National Roster which exists only on the national level due to the different nature of its operations and the problems involved.

The War Manpower Commission has also established local employment stabilization plans which are developed by local management-labor committees. These plans are applicable to the professional fields of occupations as well as to the trades, service and laboring groups. The employment stabilization plans, of which we have twenty-nine in Minnesota, in general provide controls over the transfer of workers from job to job in order to (1) eliminate wasteful labor turnover in essential activities, (2) reduce unnecessary labor migration, (3) direct the flow of scarce labor to places where most needed in the war program, and (4) to promote the maximum utilization of manpower resources.

The occupational groups included under the jurisdiction of the Procurement and Assignment Service are included under the provisions of employment stabilization plans in a great number of cases. The exceptions that come to my mind are those professional people who are self-employed and who wish to enter employment for someone else. Another quite large group of individuals who are not included are employes of nonfederal public institutions who are not covered unless the institution elects to be covered by the plans.

For those persons who are covered by provisions of the employment stabilization plans and who are under the jurisdiction of the Procurement and Assignment Service, special provisions have been made for implementing the hiring controls of the plans. It is recognized by the War Manpower Commission that the question of transfer of workers from one job to another in these fields can best be handled by the Procurement and Assignment Service since that service has most complete information on the best utilization of available workers in the field. The only occasion on which the War Manpower Commission acts in determining the availability of a worker for transfer is in a case where an employer refuses to comply with a request of the Procurement and Assignment Service for the release of an employe.

The War Manpower Commission in this region is cognizant of the problems encountered by public and private institutions related to the medical profession in recruiting workers of a sub-professional grade, in addition to those of a professional grade. At all times since shortages of workers began to appear, local offices of the United States Employment Service have made concerted efforts to recruit workers for hospitals and similar institutions in this State and in other states of Region VIII of the War Manpower Commission. On November 11, 1943, Mr. Rarig, our Regional Director, issued a bulletin to all offices in Minnesota, Iowa, Nebraska, and North and South Dakota instructing them to make every effort in aiding hospitals and similar public and private institutions in recruiting a sufficient number of workers to maintain their standards of service.

We have encountered some difficulties in furnishing workers at the sub-professional level due to the competition for workers of this type brought on by increased war production and varying wage rates. Hospitals are classified as an essential activity and it is imperative that their services be maintained.

Mr. Rarig, in this bulletin, recommended that state and area directors not only give all possible assistance to these institutions in obtaining additional workers, but also in helping them to retain their present workers. The matter of retaining the workers has been helped to a great extent by

the establishment of local employment stabilization plans. I am also happy to report that we have had some success in recruiting workers for hospitals and similar institutions.

I realize that I have raised many questions in your minds regarding specific provisions of the employment stabilization plans that may affect your own employes under your direction. It is extremely difficult to discuss employment stabilization in such a way that the discussion covers the whole field, due to the fact that local plans vary and also due to the fact that we are dealing with human beings and their work. In general, no two cases or problems arising out of the employment stabilization program are alike due to the human element.

I shall be happy to answer any questions on any specific problem that comes to your mind with regard to employment stabilization or its effect on your profession.

THE CLINICAL USE OF DICUMAROL

Report of Cases

EUGENE E. ECKSTAM, M.D.
Duluth, Minnesota

IN 1921 two veterinary scientists, Schofield and Roderick,[2] one in Canada and one in the United States, independently found that spoiled sweet clover or improperly cured silage was the cause of hemorrhagic disease of cattle. In 1940, Professor Link[2] of the University of Wisconsin succeeded in isolating the active principle, 3, 3'-Methylenebis (4-hydroxycoumarin), or dicoumarin.* Later he synthesized a substance which was identical to that extracted from the spoiled sweet clover.

Mode of Action

From data both on human beings and on experimental animals,[11,13,14,20-22] many of the basic actions of the drug have been described. There is a latent period of twenty-four to seventy-two hours before the prothrombin time is prolonged. Because of this it has been suggested[24] that dicumarol inhibits the formation of prothrombin in the liver, and that the prothrombin in the blood stream is reduced before the prothrombin time is prolonged. Dicumarol also delays clotting time, clot retraction time, and the red blood cell sedimentation rate. It dilates the capillaries, small arterioles, and venules. The bleeding time is not consistently affected because of the tissue factor present when skin is injured. Dicumarol does not dissolve the clot that has already formed, but it prevents that clot from extending and allows it to be organized.

Toxicity

Clinically there are no toxic effects other than bleeding. Hemorrhages may occur from the nose, lung, stomach, bowel, kidney, bladder, under the conjunctiva, and skin. Kidney and liver function tests are normal after prolonged use of dicumarol. A fresh blood transfusion, or bank blood under forty-eight hours old, is the treatment for bleeding. Vitamin K is generally believed not to have much effect on counteracting this bleeding, but all authors do not agree.[21]

Experimentally if large doses are given over a period of a couple of weeks, the animals will die of hemorrhagic manifestations. If one massive overdose is given,[22] the animals usually died within an hour of a cardiovascular collapse.

Indications

Thrombophlebitis and phlebothrombosis in medical or postoperative patients are two of the most common indications especially when the patient has had a previous episode of either. Pulmonary embolism is a definite indication since the embolus has developed from an existing thrombus. It has also been used in the treatment of thrombosis of arteriosclerosis (as in the cerebral and coronary vessels), Buerger's disease, and a few cases of involvement of the cavernous sinus, and retinal veins.

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*Dicumarol is the trade name adopted by the Wisconsin Alumni Research Association.

An illustration of the value of dicumarol in some of the above conditions is brought out in the Bulletin of the Mayo Clinic.[3] Out of ninety-

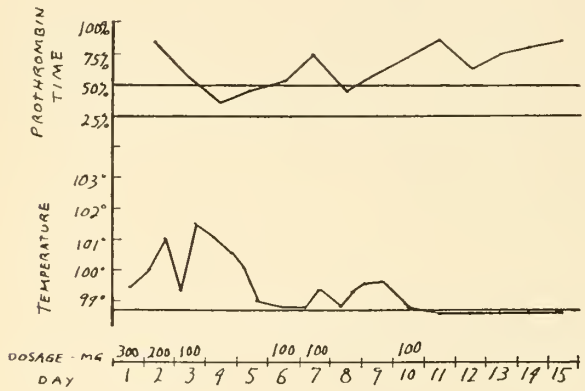


Fig. 1. Case 1.

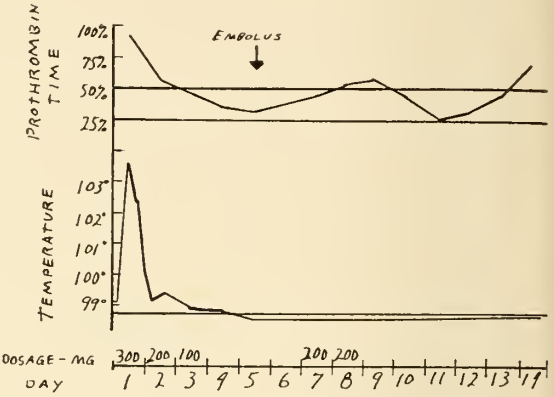


Fig. 2. Case 2.

one surgical patients, who had a postoperative pulmonary embolism or infarction, and who were treated with dicumarol, 40 were expected to have a subsequent episode. Actually only two patients did. Seventeen patients were expected to have a fatal pulmonary embolism and none of them did. Other striking figures are given for thrombophlebitis, et cetera.

Contraindications

Absolute contraindications are hemorrhagic tendencies and existing low prothrombin time, liver and kidney damage, and subacute bacterial endocarditis. Relative contraindications are the presence of ulcerative or granulating surfaces, gastric decompression tube, and pregnancy plus one week of the puerperium. Dicumarol should not be used routinely because the incidence of thrombophlebitis is less than 1 per cent, whereas the incidence of hemorrhagic manifestations due to the drug is greater.[10]

Therapy

The average patient satisfactorily responds to the following doses of dicumarol: 300 mg. the first day, 200 mg. the second day, and 0 to 200 mg. daily thereafter, depending on the prothrombin time that day. Allowance must be made for the latent period. The therapeutic level is reached when the blood prothrombin is 25 to 50 per cent of normal as measured by the prothrombin time. Dicumarol is continued until the patient is subjectively and objectively well. After stopping the drug, it takes from two to ten days for the prothrombin time to return to normal, but in cases of liver or kidney damage, or bleeding tendencies, it may take even longer. A transfusion of fresh blood is then indicated.

The following cases are selected from our series of twenty-three to date and serve to illustrate many of the points brought out in the above discussion.

Case Reports

Case 1.—Mrs. M. J., thirty-year-old housewife, had a cesarean section because of a funnel pelvis. Fourteen days later she noticed soreness, tenderness, and swelling of her left leg. The tenderness was limited to the course of the saphenous veins of the left leg, but there was no redness nor local heat. The vessels were easily palpated. The diagnosis was phlebothrombosis, and dicumarol was started along with general treatment consisting of elevation, immobilization, hot packs, and sulfadiazine. After six days the leg was non-tender and the patient had no complaints. Since a small amount of fever persisted, dicumarol was again given, and the patient was discharged as cured after fifteen days in the hospital.

Case 2.—Mr. B. M., thirty-eight-year-old laborer, had an interval appendectomy. Postoperatively, he had abdominal distention and was treated with continuous gastric decompression and parenteral fluids. Five days postoperatively, he developed a thrombophlebitis in his left thigh at the site of a hypodermoclysis injection. Dicumarol and sulfamerazine were started and the temperature dropped rapidly (see graph). Four days later the patient had the signs and symptoms of a pulmonary embolus in his left lung. He was treated with papaverine intravenously, morphine sulfate by hypo, and nasal oxygen. Chest x-ray supported the diagnosis. Dicumarol was continued and the patient recovered well enough to be discharged on his 19th hospital day.

Comment.—Pulmonary emboli have been known to occur under the administration of dicumarol, but it is not common.

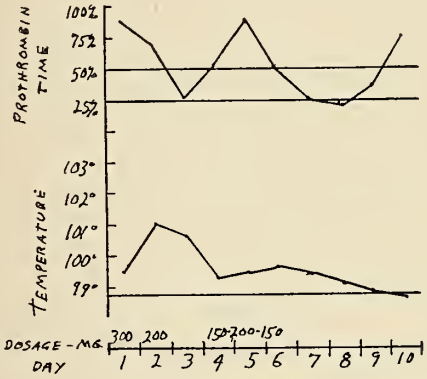


Fig. 3. Case 3.

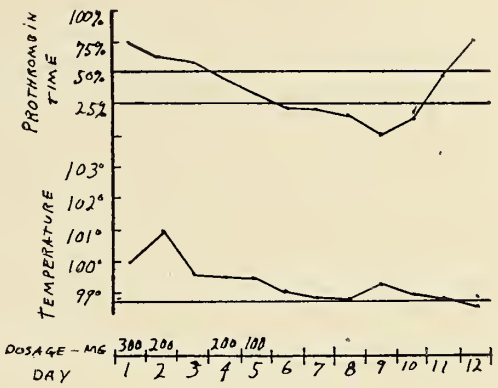


Fig. 4. Case 4.

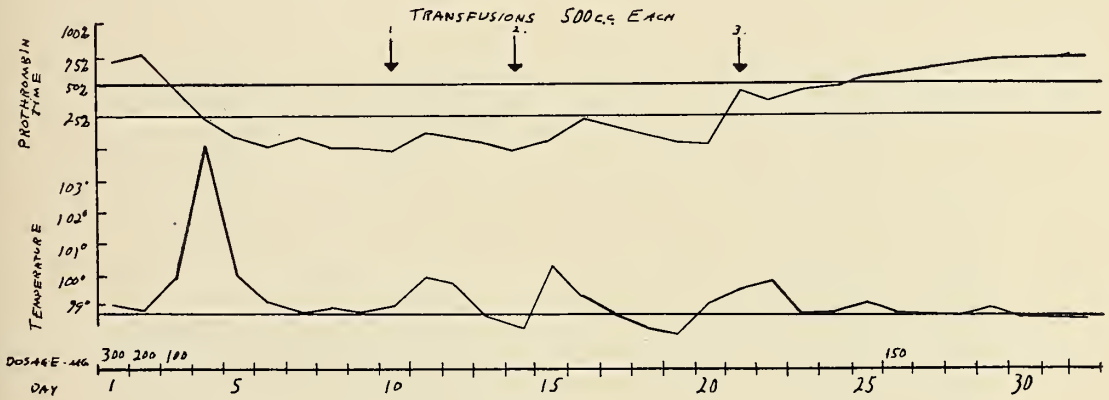


Fig. 5. Case 5.

Case 3.—Mrs. J. L., thirty-year-old housewife, was admitted to the hospital complaining of abdominal pain. She was found to have a right lower lobar pneumonia and was treated with sulfadiazine. She developed a small amount of pleural effusion which clearned spontaneously. On her fourteenth hospital day the patient developed a thrombophlebitis in her right leg, and she was started on dicumarol. The thrombophlebitis showed no appreciable response until the prothrombin time was near 25 per cent, after which it rapidly improved. The patient was discharged on her twenty-fourth hospital day.

Comment.—We have noted in many of our more severe cases that blood prothrombin must be reduced from 25 to 30 per cent of normal as indicated by the prothrombin time before there is a clinical response. Other cases respond well to levels around 50 per cent of normal.

Case 4.—Mr. S. O., forty-eight-year-old veteran, had a cholecystectomy and appendectomy in another city. Two weeks later he noticed a sudden, sharp pain in his right chest, dyspnea and apprehension, as he was arising from a supine position. A day later he was admitted to the hospital where a diagnosis of pulmonary embolism was made. He was started on dicumarol and general supportive therapy. The patient improved gradually but developed and retained pleuritic pain in his right posterior chest. Dicumarol was continued five days, but the prothrombin time went down to 4 per cent of normal (see graph). Even with this dangerously low level the patient showed no hemorrhagic tendencies. Unfortunately, the patient later developed an encapsulated pleural effusion at the site of the infarct. This was aspirated, and he gradually improved.

Case 5.—Mr. J. K. was a sixty-seven-year-old farmer. Diagnosis on admission was benign prostatic hypertrophy, mild diabetes mellitus, and auricular fibrillation. He was submitted to a transurethral prostatic resection. On his fourteenth postoperative day he complained of sudden severe pain in right foot, which became pale, cyanotic, and cold. Dorsalis pedis pulse on his right foot was absent; that on the left was full and bounding. Diagnosis of arterial embolism from an auricular thrombus was made and dicumarol was started along with

intravenous papaverine, heat and elevation of the leg. At this time examination of the heart showed frequent extrasystoles but no auricular fibrillation. Three days later, the patient complained of pain in his right chest, left renal area and vague abdominal pains. These were interpreted to be multiple embolic phenomena with involvement of the lungs and parenchymatous organs. In addition the patient developed a left pyelonephritis. The auricular fibrillation returned and digitalis was started. The condition of the foot improved somewhat.

After the first three days of dicumarol administration, the prothrombin time dropped to 1 per cent of normal (see graph). Three fresh blood transfusions of 500 c.c. each were given with increasingly better responses of the prothrombin time. Vitamin K (Hykinone) was given three times daily starting with the third transfusion. The prothrombin time then gradually rose to 70 per cent.

During the periods when the prothrombin times were at their lowest percentage, the patient had moderate to severe hematuria. This stopped only after the third transfusion.

The great toe of the right foot developed a dry gangrene, and the patient was transferred to a veterans' hospital after his fifty-first hospital day.

Comment.—In retrospect, this patient was aged and somewhat debilitated and should not have had the standard dosage. Digitalis should have been started upon admission. It appears as if Vitamin K had a beneficial effect in this case. 150 mg. of dicumarol was given on his twenty-sixth dicumarol day by mistake, but it had no effect on the prothrombin time.

Summary

Dicumarol prevents extension of intravascular thromboses and aids in the recovery of thrombophlebitis, phlebothrombosis, and pulmonary embolism. Actions, indications, and contraindications are discussed and five illustrative cases are presented. Dicumarol is a valuable drug, but it must be used with caution. Patients must be in hospitals where daily prothrombin times can be run.

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Tuberculosis, syphilis, cancer, heart disease, and other killers of mankind show no signs whatsoever of adopting a forty-hour week; instead, there is every reason to believe that unless society continues to press its fight against them with undiminished vigor we may shortly see an upsurge in their incidence as we did during and following World War I.—E. E. Kleinschmidt, M.D., *Ohio State M. J.*, March, 1944.

HAND INFECTIONS

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FEW conditions contribute more to the manpower loss in industry than infections of the hand. Seemingly trivial injuries often become infected, resulting in painful, disabling deformities for the employe and great economic loss for the employer. Because of the fine, coördinated movements of the hand, involving muscles, tendons, bones, joints, nerves and blood vessels, the preservation of function is of paramount importance. Neglected or carelessly treated cases invariably result in loss of time and often in loss of function. On the other hand, few infections respond so well to early, accurate treatment.

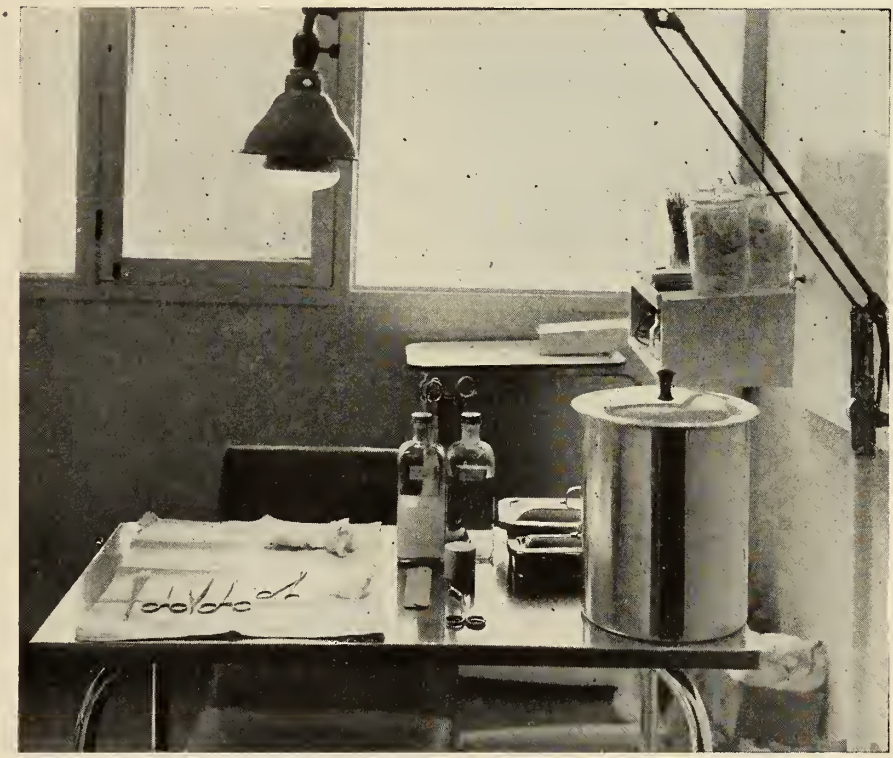


Fig. 1. Simplified dressing setup, consisting of a sterile towel on which are placed forceps, scissors, cotton balls (which are soaked in white soap and water), fine mesh gauze, ordinary gauze and applicators. Note the absence of the various brilliantly colored antiseptics.

Such treatment cannot be administered without a precise knowledge of the anatomy of the hand, and the definite routes through which infections spread. It would seem timely, therefore, to emphasize the surgical principles and surgical anatomy stressed in the authoritative work of Kanavel, Koch, Mason and Allen.

General Care

1. *Avoid Further Injury.*—Care should be taken not to injure further structures which have already been traumatized. In this regard, sharp, well-placed, purposeful incisions are essential. Moreover, the use of the brilliantly colored antiseptics, which destroy cells as well as bacteria, should be replaced by gentle mechanical cleansing of the part with white soap and water.

2. *Avoid Reinfection.*—Too often injuries and infections of the hand are relegated to office or dispensary procedures, where proper surgical surroundings are lacking, inadequate instruments are used (Fig. 1), no provision is made for

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masking the nose and mouth and thus the wounds become reinfected. When symbiosis occurs, a minor infection may become a major one with deleterious results.

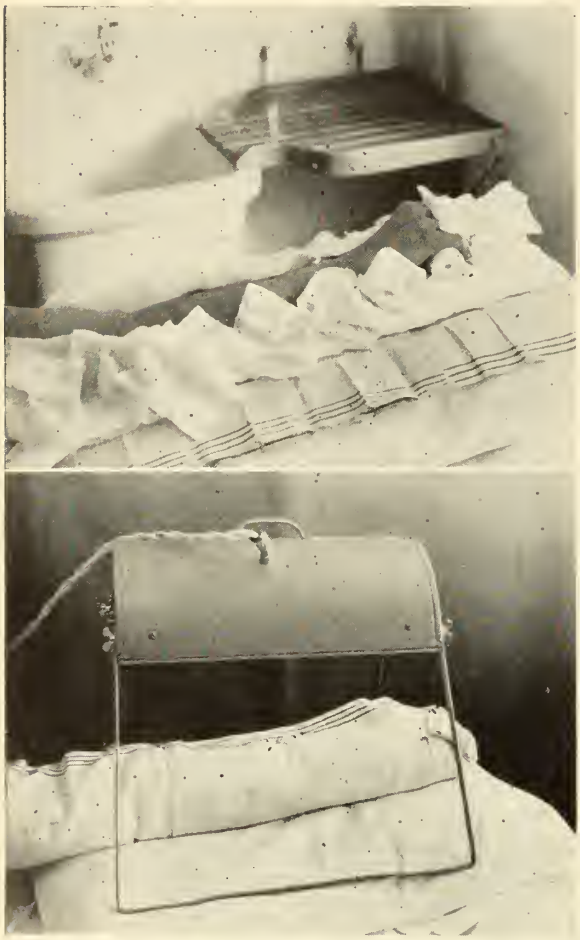


Fig. 2 *a (above)* Large, warm, moist, sterile dressing. Sterile towels are placed so as to extend from the axilla to below the finger tips. Abdominal pads and fluff dressings are used to encircle the extremity. Fingers are separated by gauze to prevent maceration of skin. A sterile roller bandage placed in the palm holds the hand in the position of function. *b (below)* Warm, sterile saline is used to moisten the dressing. Care should be taken not to soak the dressing so that maceration and edema result. The entire dressing is elevated on a pillow and a light cradle, with sufficient light bulbs to keep the temperature constant, is placed over it.

3. *Adequate Drainage.*—Early adequate drainage should be carried out with the least possible trauma to the delicate structures of the hand. In order to achieve this it is necessary to visualize clearly the path of the infection. This means that troublesome bleeding must be eliminated. A bloodless field is obtained by placing securely a blood pressure cuff on the arm and, after elevating the hand, raising the pressure in the cuff to 250 mm. of Hg. A general anesthesia is essential in order that the patient may withstand the pressure from the inflated cuff.

4. *Avoid Rigid Drainage Material.*—Rigid drainage material puts undue pressure on the delicate tissues of the hand, causes necrosis and therefore should not be used. Soft rubber tissue or vaseline gauze inserted into the angle of the wound for a period of twenty-four to forty-eight hours usually gives efficient drainage without damage to structures in the hand.

5. *Sterile Dressings.*—When dressings are made in the office, sterile instruments should be used. If moist dressings are employed to provide drainage for an infected surface, the patient should be cautioned not to moisten the dressing at home, since by so doing, without knowledge of asepsis, he can easily reinfect the wound.

For infections of the hand where hospitalization is necessary, a *large, warm, moist, sterile* dressing (Fig. 2a) has been found useful. Sterile towels are spread out so as to extend from the axilla to well beyond the finger tips. "Abd" pads are then placed on the towel to form a trough, and fluff dressings are placed on the pads so that the arm, forearm and hand are completely encased. Dressings put between the fingers will prevent maceration of the skin which occurs when skin surfaces touch. The dressing is then moistened (not soaked) with sterile, warm saline. After a layer of "abd" pads has been put over the fluffs, the towel edges are snugly fastened together with safety pins. The elevation of the forearm and hand by a pillow will prevent edema and provide dependent drainage. The dressing is kept warm by electric light bulbs in a cradle (Fig. 2b), the number of bulbs being adjusted to give the desired temperature. The entire cradle is covered with a blanket. Such a dressing is usually opened only every twelve to twenty-four hours to moisten with warm, sterile saline and to replace soiled dressings. Because of the relatively few times it is opened, the possibility of reinfection is minimized. A uniform temperature is maintained in contrast to the extreme variations when the usual hospital "hot pack wringing out" ritual is used.

6. *Purposeful Splinting.*—Splinting hastens healing since it prohibits movement of the part and thereby protects against tearing of delicate granu-

lation tissue. Moreover, by minimizing muscular movements, it prevents spread of infection through vascular and lymphatic channels. The use of a simple wooden tongue blade often provides sufficient splint for a finger. When a more extensive infection of the hand is present, a metal splint can be quickly made which will hold the hand at rest and in position of function. This position is important, for, if infection should result in extensive fibrosis of tendons, the hand will still be useful in carrying out many of its common functions (Fig. 3).

7. *Care of Granulation Tissue.*—It should be remembered that granulation tissue plays a major role in the reparative processes of trauma and infection. Every attempt should be made to preserve these vascular structures. Exuberant granulations can be dealt with by means of a firm pressure dressing, which will flatten them. Cauterization with silver nitrate should be avoided, since it will open up to infection the small vessels in the granulations. Necrotic tissue is best separated by dressings moistened with freshly made Dakin's solution. All granulating surfaces should be covered with sterile *fine-meshed gauze* so that bleeding does not occur when subsequent dressings are made. It should also be remembered that moist dressings promote drainage and do not allow crusting of exudate, with resultant pooling of pus, to occur.

8. *Route of the Lymphatics.*—In dealing with infections of the hand, it is important to remember Kanavel's Law—"the lymphatics from the palmar surface of the hand form a complex network which drains into collecting trunks which *pass by the shortest route to the dorsum of the hand.*"

Lymphangitis resulting from infection of the various fingers has very definite routes of spread. Lymphatics from the little and ring finger travel up the ulnar side of the forearm to end in the epitrochlear nodes. The lymphatics of the middle finger end in the axillary nodes in 85 per cent of the cases and in the remaining 15 per cent in the subclavian nodes. The lymphatics from the index finger and thumb extend along the radial side of the forearm and terminate in the axillary nodes.

Hand infections are conveniently classified into minor and major infections.

Minor Infections

1. *Felon.*—A felon is an infection within the closed space of the volar pad on the distal phalanx of the finger. It usually is the result of a



Fig. 3. Position of function. (From Kanavel and Mason, The Cyclopedia of Medicine, F. H. Davis Company.)

puncture wound. Because of the peculiar compartmentation here, caused by vertical fibers extending from the skin to the periosteum, the spread of pus is impossible. Symptoms of throbbing, redness and tenseness soon appear. As the pressure increases, the small digital artery becomes compressed and necrosis or even osteomyelitis of the distal phalanx may result.

To drain adequately the septæ made by the above-mentioned fibers, an *early* incision on one side of the distal phalanx should be made so as to cut *all* of the fibers. Prompt healing usually ensues. This incision is preferred to the "fish-mouth" incision, which results in a scar that impairs tactile sensation so vital in the fingers.

2. *Paronychia.*—These infections usually result from an avulsed hangnail or from injudicious manicuring of the nails. Infection forms at the edge of the nail in a small sulcus and extends under the eponychium. If treatment is not prompt, the infection finds the path of least resistance and traverses under the nail bed, forming the characteristic, crescent-shaped, inflamed "run-around." Redness, swelling and painful throbbing quickly develop. Incisions are made on both sides of the base of the nail and the eponychium is lifted from the nail bed. With a scissors the nail bed and the proximal portion of

the nail are removed. The distal or uninvolved portion of the nail, which should be left for protection, will gradually separate off with the coming of the new nail. A small piece of vaseline gauze is placed under the elevated eponychium and a large, warm, moist, sterile dressing is applied for twenty-four to forty-eight hours. Rapid healing follows this type of treatment.

3. *Subungual Abscess* may develop when a splinter has lodged under the nail. The excision of a V-shaped portion of the nail overlying the sliver will remove it and provide drainage for a potentially infected wound. A moist dressing for twenty-four hours is ordinarily necessary.

4. *Subungual Hematoma.*—When a hematoma occurs in a traumatized finger, separating the nail from the nail bed, there is usually considerable pain. The customary "drilling" of the nail to allow for the escape of blood should *not* be done. Too often organisms introduced at the time of drilling find a welcome medium of blood in which to grow, the "drill" hole seals over and infection follows. Instead, the side of the nail should be lifted up to evacuate the blood and a moist dressing provided.

5. *Indelible Pencil Injuries.*—A puncture wound from an indelible pencil often results in a serious infection. The aniline dye, usually methyl violet, causes a chemical reaction. The dye, being alkaline, reacts on the nucleic acid of the cells, causing necrosis often with toxic symptoms. Wide excision with care being taken to remove all of the dye-stained tissue is the method of choice in dealing with such an infection.

6. *Subcuticular Infections.*—These often result when organisms are introduced under the thickened epidermis of the palm by a puncture wound. Pain, redness and swelling quickly follow and the thickened epidermis is undermined by pus. Early removal of the overlying thickened epidermis followed by a moist dressing affords prompt relief.

7. *Hair Follicle Infections.*—These occur over the dorsum of the hand and proximal phalanges. Such infections are not unlike furuncles and carbuncles elsewhere on the body except that there usually is more swelling present due to the loose integument over these areas. If early, adequate drainage is not instituted, the infection may spread into the subcutaneous and subaponeurotic spaces and cause irreparable necrosis to the relatively avascular extensor tendons. As soon as possible after localization has occurred, a crucial incision should be made and the flaps undercut until normal tissue is encountered. After the removal of the necrotic tissue the flaps are held apart by loosely packed vaseline gauze and a moist, sterile dressing is applied. Twenty-four hours later the vaseline gauze is removed, allowing the flaps to fall inwards so as to obliterate the space. Early improvement can be expected from this type of treatment.

8. *Collar-button Abscess (Frog Felon).*—This infection usually arises when organisms enter through a fissure in a firm callus near the metacarpal-phalangeal joint in the palm. When the fissure closes over, infection spreads through the less firm dermis and palmar fascia, and quickly invades the tissue in the web of the fingers and dorsum of the hand. Swelling of the web, with the characteristic separation of the fingers, soon occurs, and unless early adequate drainage is carried out, a diffuse cellulitis in the dorsum of the hand rapidly follows. With the aid of a bloodless field, an incision distal to and parallel with the distal flexion crease will avoid digital nerves and vessels and accomplish adequate drainage. Although with this type of infection there may be extreme swelling on the dorsum of the hand, this should not lead one to make ill-advised, needless incisions in this location. A soft vaseline gauze is placed in the angle of the wound and a large, warm, moist, sterile dressing applied to the extremity. At the end of twenty-four to forty-eight hours, upon removal of the gauze drain, the infection should show the results of timely, competent treatment.

Major Infections

Under this heading we are concerned with infections of the digital tendon sheaths, the bursæ, and involvement of the deep fascial spaces of the hand. An understanding of the anatomy and the potential routes of spread of infection between the sheaths, spaces and bursæ is essential to establish accurate treatment. To deal with such infections successfully without injury to the vital, complex structures of the hand is, indeed, a major surgical procedure.

Anatomical Peculiarities.—The *tendon sheaths* in the palmar side of the hand are smooth, glistening, synovial membranes containing a small amount of synovial fluid which facilitates the smooth gliding action of the flexor tendons of the fingers and thumb. They are in close proximity to, and often continuous with, the ulnar and radial bursæ and the thenar and middle palmar spaces (Fig. 4).

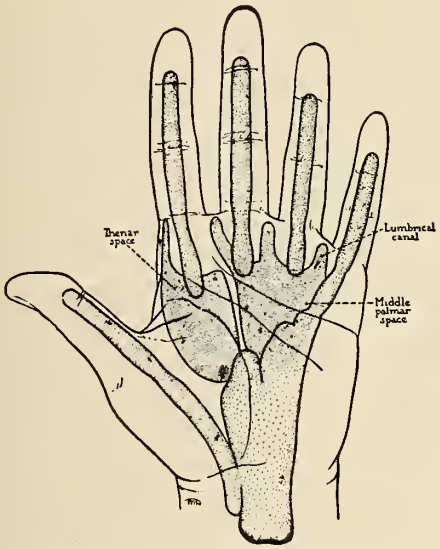


Fig. 4. The routes of extension from tenosynovitis. (From Kanavel and Mason, The Cyclopedia of Medicine, F. H. Davis Company.)

The tendon sheaths of the *index, middle* and *ring* fingers extend from a point just distal to the distal interphalangeal joint to a point just proximal to the metacarpal-phalangeal joint. The proximal ends of the sheaths are so arranged that when the sheaths become distended with pus, the proximal end becomes incompetent and pus escapes into the deep fascial spaces of the hand, i.e., the thenar and middle palmar spaces. The thenar space lies deep on the radial side of the hand, while the middle palmar space is deeply situated on the ulnar side. (The fascial band extending from the middle metacarpal bone arbitrarily divides the hand into the radial and ulnar halves.) The tendon sheaths of the index finger lies in close relationship or communicates with the thenar palmar space; the tendon sheath of the ring finger with the middle palmar space, while the tendon sheath of the middle finger may communicate with either the thenar or middle palmar space, or both.

The tenden sheath of the *little finger* becomes continuous with the *ulnar bursa.* This is a rather large bursal sac which courses proximally on the ulnar side of the hand under the hypothenar muscles and volar carpal ligament, to end about 4 cm. above the wrist. It encases all of the flexor tendons except the long flexor to the thumb. The tendon sheath of the *thumb* extends proximally into the *radial bursa,* which lies under the thenar muscles and volar carpal ligament and contains the tendon of the flexor pollicis longus. The radial bursa in a high percentage of cases communicates with the ulnar bursa. Because of this close relationship, infection of the thumb quickly extends so as to involve the little finger and *vice versa.*

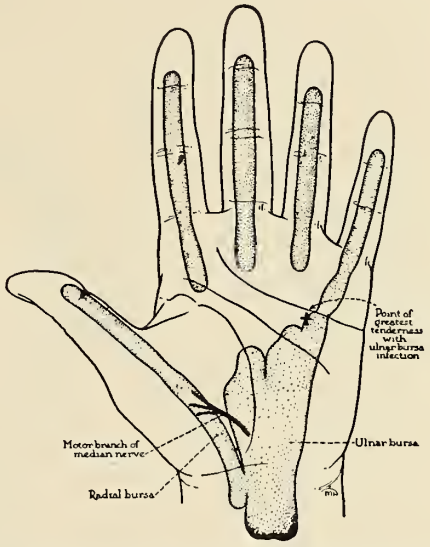


Fig. 5. This shows the usual arrangement of the ulnar and radial bursæ. Because of this communication, extension of infection often takes place between the bursæ. When neglected, further extension will involve the fascial spaces of the forearm. (From Kanavel and Mason, The Cyclopedia of Medicine, F. A. Davis Company.)

Tenosynovitis.—When organisms enter the tendon sheaths, the infection for a short time is limited to the confines of the sheath; but when the tendon sheath becomes overdistended with pus, the proximal constricting portion at the level of the metacarpal-phalangeal joint gives away, allowing the infection to spread through the respective routes mentioned above.

Tenosynovitis is often difficult to diagnose. However, four cardinal symptoms are usually present:

1.) There is uniform swelling of the *entire* finger.
2.) The finger is held rigidly in partial flexion.
3.) Extreme pain is present on attempting to extend the finger.
4.) There is excruciating pain when pressure is made over the tendon sheath.

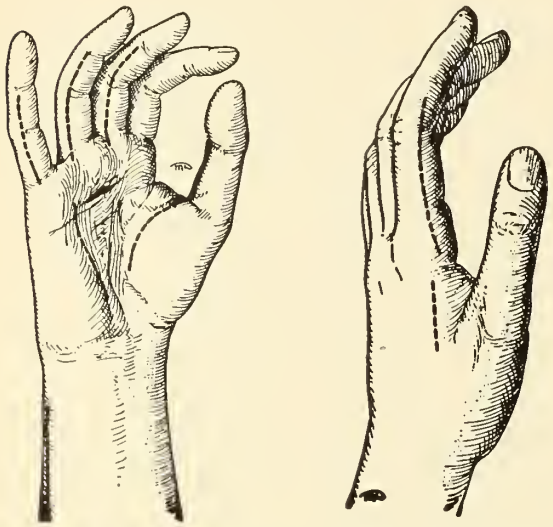


Fig. 6. These accurately placed incisions have been found to drain adequately the tendon sheaths, lumbrical canals, middle palmar space, thenar space, radial and ulnar bursæ, and space of forearm. A bloodless field minimizes trauma to vital structures. (From Kanavel and Mason, The Cyclopedia of Medicine, F. A. Davis Company.)

An evaluation of *all four* symptoms should be made in ascertaining whether or not tenosynovitis is present.

Thenar Space Infection.—When this space becomes infected, either by a puncture wound directly into the space or, more commonly, from extension of tenosynovitis of the index finger or middle finger (less common), there is swelling in the web between the index finger and thumb. The thumb is pushed out in abduction and is held in partial flexion. The area is red, warm and tense. There is usually some swelling along the radial side of the index finger, as the lumbrical canal in this area is frequently involved also.

Middle Palmar Space Infection.—This most commonly occurs from the extension of tenosynovitis of the middle and ring fingers. Infection in this space, since it lies deep in the hand under the dense palmar fascia, does not cause much swelling. There is, however, a loss of the concavity of the palm. Pain and a feeling of tenseness and puffiness over the space are usually experienced. Associated involvement of the lumbrical spaces between all of the fingers, with accompanying redness and tenderness, is commonly found.

Ulnar and Radial Bursitis.—When infection progresses from tenosynovitis of the little finger, the ulnar bursa becomes distended. There is some tenderness along the entire sac, but over the fourth metacarpal bone just proximal to the distal flexion crease, where the bursa comes nearest the surface of the palm, is the point of greatest tenderness (Kanavel's point). Infection of the ulnar bursa almost invariably involves the radial bursa (Fig. 5), as well as the tendon sheath of the thumb. Because of the close interrelationship between these two bursæ at the wrist, involvement of one should immediately bring to mind the possibility of infection in the other. When the radial bursa is infected, the thumb is held in partial flexion and there is tenderness over the tendon sheath and thenar muscles. It should be understood that when the sheath and bursa containing the flexor pollicis longus tendon become involved first, the infection spreads in reverse order, finally ending with involvement of the ulnar bursa and tendon sheath of the little finger. If early drainage of these distended bursæ is not instituted, rupture may occur into the fascial spaces in the forearm, with aggravation of symptoms.

Treatment

As early as possible adequate drainage should be carried out by accurately placed incisions (Fig. 6) made under a general anesthesia and with the benefit of a bloodless field.

In the case of *tenosynovitis* of the fingers, the incision should be on the ulnar side of the digit (excepting the index finger), so as to facilitate subsequent dressings and give simultaneous drainage to the lumbrical canals. The incision should be on the radial side of the index finger so that it can be easily extended, should the thenar space and lumbrical canal be involved. These incisions should be made just volar to the digital nerves and arteries. When in doubt, it is better to open a tendon sheath, even though it may prove to have been unnecessary. Procrastination or neglect all too often result in widespread infection and necrosis of tendons.

The *thenar space* is gained by making an incision on the radial side and slightly volarwards to the second metacarpal. The *middle palmar space* is opened by a transverse incision that is just distal to the flexion crease. The center of the incision is approximately midway between the third and fourth metacarpal bones.

When the *radial bursa* becomes distended from extension of tenosynovitis of the thumb, the tendon sheath is first drained by an incision on the ulnar side of the thumb; then the incision, beginning at the metacarpal-phalangeal joint of the thumb is extended over the thenar eminence. Care should be taken not to injure the motor branch of the median nerve, which innervates the muscles of the thenar group.

Two incisions are necessary to provide adequate drainage for the *ulnar bursa.* The distal incision is made over the fifth metacarpal and parallel to the hypothenar eminence. The second incision on the ulnar side of the wrist should start at the level of the styloid process of the ulna and should be about 10 cm. in length. Access to this proximal portion of the bursa is gained by entering between the pronator quadratus muscle and the deep flexor tendons. Seldom is it necessary to have through-and-through drainage, as an adequate ulnar incision usually suffices. In making this incision care should be taken not to injure the ulnar nerve and artery.

When the above-mentioned incisions have been made, vaseline gauze is placed in the angle of the incisions to keep them from sealing over. In these major infections of the hand, a large, warm, moist, sterile dressing is applied with the hand placed in the *position of function.* This position im maintained by placing a sterile roll of bandage in the palm of the hand or by putting the hand in an aluminum splint which has been previously autoclaved.

Supportive treatment of rest, nourishing foods, sedation, sulfonamides and blood transfusions will all be found of value in these severe hand infections.

Summary

Even a minor injury to the hand may become infected and impair or destroy the usefulness of this delicately coördinated mechanism. It is ever a serious matter and is of especial importance in relation to the present manpower shortage. Therefore, the author has attempted to review the principles, formulated by Kanavel, Koch, Mason and Allen, involved in the diagnosis and treatment of hand infections.

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The prevention of disease and the prevention of war are today the two great world problems. The way is pretty plain in this matter of war, be it against a pathogenic microbe or against a pathologic nation of people. As we have organized preventive medicine, we must organize preventive war. In medicine we do not talk about peace with the disease, with the parasites, with the tubercle bacillus, for example. We do not propose to write a peace treaty with these causes of disease. We do not sit around a peace table with our disease-producing enemies. We wage continuously either an active or preventive war. We should have a continuous preventive war program fashioned along the lines of our continuous preventive disease program. —David John Davis, M.D., *Diplomate*, January, 1944.

THE CRIPPLED APPENDIX—A PEDIATRIC PROBLEM

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Saint Paul, Minnesota

MEDICINE is a field in which intelligently interpreted "feelings" still have a place in the progress toward truth in spite of the modern interpolation of the "scientific method" as a standard of its advance. It is under the banner of those to whom this conception seems reasonable that I dare present to this group a clinical impression of the magnitude involved without supporting it by a vast array of facts and figures. To them it will be evident that the individual observations leading to the impressions that are expressed, while they have not been recorded, are probably not inconsiderate over a period of more than twenty years. And to them it will be evident that whatever shall be offered as solemn opinion will be offered, not as final, but as a starting point for argument which might, in the resulting interchange of ideas, lead off on paths to greater accuracy. To them I need make no apology—to others I make no more.

By the term "crippled appendix" I mean one with such physical structure that the normally free continuity between its lumen and that of the cecum is impaired. The encroachment may occur at any point along its entire extent and may result from any of the many causes of kinks, constrictions, et cetera, which so frequently affect this organ, or from abnormal accumulations within. (It seems almost axiomatic that such accumulations should be secondary, however.) Usually, in infancy and early childhood at least, the impairments will be of congenital origin, but as age advances the possibility of adhesions from previous inflammatory reactions assumes increasing importance. The inflamed appendix, as such, is excluded except in so far as it may be coincidental to a predisposing structural pathology.

Johnny was a boy of almost any age. He had always been essentially well (or he might not have been). He had had the usual run of contagious diseases (or maybe he had not) and had not suffered too much from any (or maybe he had). He had (or maybe he had not) had his tonsils and adenoids removed some time earlier because of many "colds" and this operation had (or had not) seemed to accomplish the desired effect. At any rate everyone concerned thought that he was better for a time (or maybe they had not). Johnny was any child, male or female, who was running the hurdles of growing up.

Johnny had, however, in his composite make-up, one peculiar characteristic which gained him access to rather a select company as he went along. He possessed a gastro-intestinal tract that had a flare for making its presence known. Any disability, regardless where it was focused, seemed a signal for it to go into action either in the form of vomiting, or diarrhea, or vague pains of variable character, all of which served to muddle the clinical picture for parents and physician alike. Never did it clarify. Even between definite illnesses Johnny often complained of phantom-like pangs which could never be explained, or he couldn't eat more than a mouthful because of a feeling of fullness. His physician said it was a spastic bowel, having felt a rope-like colon on many an occasion, but his parents thought a cathartic or an enema should correct matters. Some of his vomiting attacks had proceeded to a critical state where removal to a hospital was considered. Gradually his physician and his parents, who had been through this thing in a loose way together many times before, had become complacently aware that Johnny had a "weak" stomach and was apt to vomit or have abdominal complaints whenever otherwise upset. They had passed it off on many occasions as "intestinal or stomach flu." He seemed subject to that. Then—something happened to Johnny.

He had had a slight cold, or such his mother imagined, and started with his usual abdominal difficulties. Nothing seemed different and the customary remedies were applied, perhaps with the telephonic advice of the physician. Nobody paid much attention until it finally dawned that this spell seemed a little different from those before. The boy was beginning to develop fever and he would no longer walk to the bathroom

Read before the Northwest Pediatric Society at Bayport, Minnesota, October 1, 1943.

because it hurt to stand up. The mother was alarmed when she found what misery she caused in rubbing Johnny's abdomen, a procedure always welcomed before. When the physician arrived the urgency was immediately evident to him and he either did or did not get the appendix out in time to avert catastrophe.

At operation the surgeon found an appendix grossly abnormal in its anatomical structure—being excessively long and consequently twisted, or bound down by adhesions, or hampered in whatever might be its functional activity by peritoneal bands, mesenteric folds, a retrocecal position, et cetera, and probably plugged at some point proximal to the inflamed or perforated area by a fecalith or other obstruction.

Johnny, up to the time of a subtle and not easily recognized turning point in this last illness, had been one of the most annoying types of cases with which the pediatrician has to deal, annoying but not serious. Cyclic vomiting, spastic bowel with its constipation or diarrhea (or both), unexplained nausea with or without vomiting, inability to eat more than a mouthful before feeling "full"; such common so-called functional disturbances of children were all in the picture. But from the time that that almost indiscernible variation from the usual progress of events occurred, Johnny became one of the most seriously critical types for the surgeon. His further course does not concern this paper, except, perhaps, to point out that if he got well he probably was essentially relieved of his gastro-intestinal complaints.

In case it seems to some that the picture of Johnny is too precisely drawn, let's look at a few case reports.

Case 1.—The patient, a girl of twelve, has been under my care for the last nine years.

Predominating complaints have been gastro-intestinal, consisting of attacks of pain, either with or without nausea and vomiting, occurring either with or without other evidence of disease. Fever, if present, has never been attributable to the gastro-intestinal complaint.

Physical findings referable to the abdomen have been confined to a somewhat tender rope-like sigmoid or descending colon except on one occasion when definite tenderness was demonstrable over the appendix. The mother was properly warned.

The present attack started in the usual manner. After eighteen hours the mother recognized beginning fever and tenderness in the right lower quadrant. The appendix was removed two hours later. Its base showed a marked constriction, either congenital or at least of long standing, while the portion immediately distal was dangerously distended, inflamed, and covered with exudate. The tip appeared relatively innocuous. Within the distended portion disintegrating fecaliths and pus were found. Microscopically the acute infection extended through the entire wall onto the serosal surface.

Case 2.—This patient, a girl of seven, has been under my care since eighteen months of age.

Predominating complaints have been respiratory, centering around a nasal sinusitis and its complications but the predominating worry has been in the accompanying abdominal complaints. They were—stomach ache before breakfast, in the middle of the meal, between meals, in the middle of the night, associated with constipation or diarrhea. Often she could eat but a few mouthfuls before feeling "full." All of these symptoms might come on without other evidence of disease.

Physical findings referable to the abdomen were limited to a rope-like descending colon or sigmoid, which was tender if sufficiently prodded. In spite of the absence of symptoms referable definitely to the appendix the mother was warned.

On the occasion of her final attack she awakened in the morning with a not unusual abdominal discomfort. It was not severe and she even went to school in the afternoon. She was, however, content to lie around after coming home. Early in the evening the mother recognized beginning tenderness in the region of the appendix and I was called. Upon confirming this observation—the first time appendiceal tenderness had ever been demonstrated—and finding that the patient's temperature was beginning to rise I sent her to the hospital for immediate appendectomy.

The appendix was found to be almost entirely retrocecal with a small portion of the tip protruding. This was mildly inflamed.

Case 3.—This patient, is a boy, nine and one-half years old, who has been under my care since birth.

Predominating complaints consisted of nasal sinusitis and its complications but the predominating worry was the abdominal symptoms which always accompanied other illnesses. These consisted of protracted nausea and vomiting, and abdominal pain of variable character. Over the period of the last year tenderness over the appendix had been demonstrable after, and even between, attacks.

The parents were warned of the possibilities and they decided to have the appendix removed. It was not inflamed but was long, and much twisted upon itself. The patient has not had a single abdominal complaint in the five years since the operation.

Case 4.—This patient, a girl, seven and one-half years old, has been under my care for five years.

Predominating complaints had been respiratory infections but the greatest worry was the vomiting attacks,

accompanied by abdominal pain of indefinite character which complicated every illness of whatever kind. Often they overshadowed the primary illness, such as an acute sore throat, measles, etc.

Physical findings referable to the abdomen were always negative until one time when I was called toward the end of a typical spell. I found the patient to be mildly tender over the appendix. The parents were warned.

Seven months later an "interval" appendix was removed. It was not inflamed but was constricted at its base as though tied by a suture. The pathologist found slight gross and microscopic evidence of inflammation and in addition the cross-section of a pin-worm within its lumen.

The patient has not had a single abdominal complaint in the two years since the appendectomy.

If time permitted the four cases cited could be augmented by many more, each reëmphasizing and further illustrating the fundamental contentions. For instance there is the boy, nine and a half years of age, who started with his final attack after arriving in the hospital the night before a contemplated nose and throat operation. Even the hospital authorities didn't recognize the serious character of his trouble until morning and the surgeon barely got the appendix out before rupture. Then there is the girl whose abdominal troubles had not dated from early infancy but only from a first mild attack of what was thought to be appendicitis about one year before. At the time of her operation the anatomical irregularity consisted of inflammatory adhesions at the base. All cases mentioned have, of course, been relieved of their abdominal complaints by the operation.

Discussion

It is assumed that the mechanism in these cases is that of a partial obstruction to the outflow of appendiceal secretions and foreign material which results in a painful spasm and which disappears if and when the obstruction is relieved. The final attack is the one in which obstruction is complete when distention, infection, and destruction of tissue develop with great rapidity—often, as we so frequently find to our sorrow, racing on ahead of all clinical methods of recognition to final gangrene, perforation, and peritonitis.

That secretion does go on within the appendiceal lumen has been abundantly proven by Wangensteen and his associates, and that once obstruction is complete, distention, infection, and gangrene quickly ensue has also been demonstrated by them. It is not easy to find so satisfactory experimental support for the supposition that the varied temporary symptoms have their origin in partial and perodic obstruction. A vicarious help exists in the contemplation of what is known to be the usual reaction of any hollow viscus to blockage of its lumen and the correlation of this action with the vagaries of response to smooth muscle spasm which the sympathetic nervous system displays. It does not seem to far-fetched to surmise that nausea, vomiting, constipation, diarrhea, or pains of a spasmodic character, either local or remote, could find their origin in a trigger mechanism consisting of an appendix in spasm. Principal support for the theory comes, however, from the fact that such symptoms cease to recur after appendectomy.

This paper serves no purpose unless it suggests a means of recognition of the presence of the crippled appendix before its possessor encounters serious difficulty. Obviously, since there is no inflammation, the criteria for the diagnosis of acute appendicitis do not apply except when the process has advanced toward the final phase which *is* acute appendicitis. By the same token, a report of "normal appendix" from the pathologist is not disconcerting. As in intussusception, the history gives the first clue. Its presence should be suspected in every child whose experience, as had Johnny's, has been crowded with gastro-intestinal incidents. If to this history the finding of definite tenderness over the region of the appendix can be added I am almost persuaded that the presence of a "crippled appendix" is assured. X-ray studies may be very valuable, especially if the appendix can be visualized and the tenderness fixed at that area.

Treatment is, of course, the surgical removal of the appendix.

ISOLATION FROM MILK SUPPLIES OF SPECIFIC TYPES OF GREEN-PRODUCING (ALPHA) STREPTOCOCCI AND THEIR THERMAL DEATH POINT IN MILK

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DURING studies on the etiology of various diseases,[8,10,12,13,14,17,27] it was found that culture mediums in common use often did not suffice for the isolation of causative strains of alpha streptococci or for the maintenance of their specific properties. Mediums which I have found especially favorable for the primary isolation and maintenance of characteristic properties of pathogenic alpha streptococci were dextrose-brain broth and soft dextrose-brain agar.

The etiologic relation of streptococci and other organisms found in ra wmilk to various diseases is well recognized. There is a growing conviction among health officers and physicians, especially pediatricians, that pasteurization of milk by present-day methods does not always suffice to prevent epidemic infection.[32] Ayers and Johnson[3] consider pasteurization, as now practised, to be a method of obtaining the thermal death point of only a majority of organisms.

It occurred to me that the mediums found highly favorable for the isolation of causative alpha streptococci from persons ill might also be more suitable than ordinary mediums (1) for the isolation of pathogenic streptococci from milk supplies and (2) as test mediums to determine the thermal death point in milk of alpha streptococci. Accordingly, comparative cultures were made in dextrose-brain broth, dextrose broth and on blood-agar, from samplings of raw and pasteurized milk supplies, from raw milk after pasteurization under controlled conditions in the laboratory, from commercially pasteurized milk after repasteurization, from samplings obtained in a sterile manner directly from cows, and from suspensions of streptococci that had been heated in milk to 63, 68 and 73° C., respectively, for thirty minutes.

It is my purpose at this time to describe the methods used and to report the results obtained in an extended study on the virulence, cataphoretic velocity, serologic properties and heat-resistance of green-producing or alpha streptococci isolated from milk supplies during epidemics and remote from epidemics, and to indicate a pasteurizing temperature which invariably kills specifically virulent alpha streptococci commonly found in milk supplies.

From the Division of Experimental Bacteriology, Mayo Foundation, Rochester, Minnesota. Read before the meeting of the Southern Minnesota Medical Association, Austin, Minnesota, August 23, 1943.

Methods

Samples of milk from supplies studied were obtained through the coöperation of physicians, health officers, hospital superintendents and dairymen and represented a very wide range of conditions as to size and type of epidemics, season, climate, size of dairies and different methods of pasteurization and refrigeration. These included samplings from supplies during studies of eight major epidemics of poliomyelitis, four major epidemics of encephalitis, five distinct outbreaks of persistent epidemic hiccup and seven major epidemics of influenza, in addition to supplies studied during minor outbreaks and in many individual cases. Most of the samples were from grade A supplies and the bacterial content was checked by the constituted authorities and myself by present-day standard methods. The milk had been pasteurized by the holding and flash methods. Inspection of herds for evidence of disease of the udder and in regard to cleanliness in the handling of the milk likewise had been made in the usual manner. Results that were considered as having epidemiologic importance were reported immediately to the constituted authorities in question.

Cultures were made chiefly in tall tubes of dextrose-brain broth, soft dextrose-brain agar, dextrose broth and autoclaved litmus milk, each containing 20 c.c. of medium, and on blood-agar plates. The dextrose-brain broth and soft dextrose-brain agar (0.2 per cent agar) were prepared from 0.2 per cent dextrose broth to which Andrade's indicator (1 c.c. of indicator to 1,000 c.c. of broth) had been added. Pieces of fresh calf brain (approximately 1 part of brain substance to 6 parts of medium) were added to tall columns (10 to 12 cm.) of the medium in tubes or bottles. The reaction of the dextrose broth was brought to pH 7.2 and after the brain sub-

stance had been added, the mediums were autoclaved at 20 pounds' pressure for twenty minutes.

Dextrose-brain broth, dextrose broth and autoclaved litmus milk were inoculated routinely with 2 c.c. of the different samples of milk under study and 0.05 c.c. of the milk was spread on blood-agar plates. After it was found that epidemic strains of streptococci isolated from patients grew in much higher dilution than nonepidemic strains, when subjected to the serial dilution method[16] in the brain-containing mediums, this method was also used in culturing milk to compare colony counts obtained in this way with cultures on blood-agar and with counts obtained by the standard milk-agar plate method.[1]

The serial dilution method,[16] in which it was found that virulent streptococci often grew in far higher dilution than did saprophytic organisms, was also used to obtain pure cultures of streptococci especially suitable for inoculation into animals and for serologic studies. By this method, cultures were made routinely alternately in dextrose-brain broth and dextrose-brain agar, beginning with dextrose-brain broth, thus using four tubes of dextrose-brain broth and three tubes of dextrose-brain agar, or in successive tubes of dextrose-brain agar, each tube containing about 20 c.c. of medium. Just before inoculation, the tubes of mediums were steamed for fifteen minutes in the autoclave and then cooled to 40° C. The first tube in the series was inoculated either with 2 c.c. of milk from a 3 c.c. pipet, making a dilution of 1:10 (10^{-1}), or with a 26-gauge nichrome wire 14 cm. in length, which was dipped into the milk or culture for a distance of 12 cm. and to which there adhered approximately 2 c.mm. of liquid, making a dilution of 1:10,000 (10^{-4}). Two-tenths cubic centimeter, by the pipet method, or 2 c.mm., by the wire method, was transferred serially to the remaining six tubes, at intervals of ten to twelve seconds, making dilution increments of 10^{-2} or 10^{-4}, respectively, at every step. Thorough mixing of the inoculum in each tube was accomplished by rapidly filling and emptying the pipet six times with a rubber bulb of 3 c.c. capacity and by twirling the wire vigorously in each tube. The same pipet was used throughout each series of dilutions and the wire was sterilized in the Bunsen flame only before and after the first transfer. It is to be understood that dilutions made in this way represent dilution of liquids and not necessarily of organisms.

The serial dilution cultures were made in a nonstacked bacteriologic hood under conditions in which control cultures made of sterile material never yielded streptococci. All inoculated mediums were incubated at 34° C. (93.2° F.). Cultures were examined daily for evidence of growth and films were made, stained by Gram's method and counterstained with 2 per cent aqueous solution of safranine 0, and examined microscopically for type of organisms.

Cultures showing streptococci in dextrose-brain broth and dextrose-brain agar were plated routinely on blood-agar to determine their type. The solubility in bile or sodium taurocholate of saline suspensions of the streptococci isolated was tested by the usual methods. The fermentative power of the streptococci isolated was not studied routinely because preliminary studies did not show any correlation between fermentative power and specific virulence, serologic reactions or distribution curves of cataphoretic velocity.

Studies on the resistance of streptococci to heat were made by heating 5 or 10 c.c. of milk naturally contaminated with streptococci and by adding the streptococci to 5 or 10 c.c. of autoclaved milk in glass ampules or bottles. After inoculation the ampules were sealed in the Bunsen flame and the bottles were sealed with sterile, overhanging rubber stoppers. Both were submerged in a water bath during the heating period. Certified thermometers were used to check the temperature in different parts of the pasteurizing bath and of milk contained inside of two ampules or bottles throughout the heating period. In order to be sure that the temperature was the same for each sampling, the water bath containing the samples or bottles was shaken on a shaking machine during the heating period. The temperature of the water in the bath and of the milk in ampules or bottles was increased slowly, so that approximately fifteen minutes were required to bring the temperature from about 25° C. (77° F.) to the required point, or the ampules or sealed bottles were added to the previously heated water, thus simulating the principles used in the commercial holding and flash methods of pasteurization. The heating period of thirty minutes was timed from the moment the temperature of the milk in the control vials and the temperature of the water bath had reached the desired point.

Young (sixteen to twenty-hour) cultures of streptococci in dextrose-brain broth, on isolation

and after prolonged cultivation on artificial mediums, were used to inoculate the autoclaved milk to be heated. Approximately 0.02 c.c. of the dextrose-brain broth culture, or about 1,000,000 organisms, was inoculated per cubic centimeter of the autoclaved milk. To simulate commercial conditions in the handling and use of milk, samples from supplies to be tested and the inoculated specimens often were placed in the refrigerator at 10° C. overnight or longer and then kept at room temperature for short periods before heating. Samples of raw and pasteurized milk and the suspensions of streptococci in autoclaved milk were heated for thirty minutes at 63° C. (145.4° F.), 68° C. (154.4° F.) and 73° C. (163.4° F.), respectively. To determine the presence of viable organisms after heating, subcultures were made routinely in dextrose-brain broth, and often also in dextrose broth, autoclaved milk and on blood-agar, before and after heating.

Rabbits were inoculated intravenously with 0.5 c.c. of undiluted dextrose-brain broth culture per 100 gm. of body weight, and intracerebrally with 0.1 c.c. of 1:200 to 1:10,000 dilutions of eighteen-hour dextrose-brain broth cultures of the streptococci under study. Mice were inoculated intracerebrally with 0.03 c.c. of 1:200 to 1:10,000 dilutions, intraperitoneally with 1.2 c.c. and intranasally, while under deep ether anesthesia, with 0.05 c.c. of the undiluted eighteen-hour dextrose-brain broth cultures of the streptococci.

The distribution curves of cataphoretic velocity and the incidence of agglutination of the streptococci by the respective antistreptococcic serums of comparable strength were determined by methods previously described.[13,17]

TABLE I. ISOLATION OF ALPHA OR GREEN-PRODUCING STREPTOCOCCI FROM RAW AND PASTEURIZED MILK SUPPLIES IN RELATION TO EPIDEMIC DISEASES

Source and type of milk cultured		Results of cultures in: Dextrose-brain broth — Specimens	Dextrose-brain broth — Per cent yielding streptococci	Dextrose broth — Specimens	Dextrose broth — Per cent yielding streptococci	Blood-agar — Specimens	Blood-agar — Per cent yielding streptococci
Poliomyelitis	Raw supplies	206	80	41	30	64	20
	Raw milk, directly from healthy cows	84	90				
	Pasteurized supplies	123	**73**	29	**34**	29	31
Encephalitis	Raw supplies	180	83	65	43		
	Raw milk, directly from healthy cows	33	58	33	30	33	18
	Pasteurized supplies	150	**77**	64	**41**		
Influenza	Raw supplies	60	75	60	52	60	45
	Raw milk, directly from healthy cows	69	55	33	24	32	19
	Pasteurized supplies	58	**53**	58	**45**	58	14
Hiccup	Pasteurized supplies	28	**61**	23	**48**	25	20
Remote from epidemics	Raw supplies	108	79	47	55	40	38
	Raw milk, directly from healthy cows	92	54	92	22		
	Pasteurized supplies	71	**18**	71	**11**	32	16
Total	Raw milk	832	**75**	371	36	229	29
	Pasteurized milk	430	**62**	245	33	144	19

Results of Cultures

The incidence of isolations of streptococci in dextrose-brain broth, in dextrose broth and on blood-agar from raw and pasteurized milk supplies and from raw milk obtained in a sterile manner directly from cows, in relation to epidemic diseases and interepidemic periods, is summarized in Table I. It will be seen that the incidence of isolations of streptococci from the three types of milk cultured, but especially from composite raw milk, was uniformly higher, and in most instances much higher, in dextrose-brain broth than in dextrose broth and on blood-agar. There was a much higher incidence of isolation of streptococci from pasteurized samples during epidemic periods than from pasteurized samples during periods remote from epidemics, ranging from 77 per cent during to 18 per cent remote from epidemics. Of 832 samples of raw milk, 75 per cent yielded streptococci in dextrose-brain broth; of 371 samples, 36 per cent yielded streptococci in dextrose broth and of 229 samples, streptococci grew on blood-agar in only 29 per cent. The average incidence of isolations of streptococci from commercially pasteurized milk was 62 per cent in dextrose-brain broth, 33 per cent in dextrose broth and 19 per cent on blood-agar.

The comparative results from the use of different culture mediums in serial dilution cultures for the isolation of streptococci from raw and

pasteurized milk are well illustrated in Tables II, III and IV. The samples cultured were from a milk supply during a mild epidemic of infection of the upper respiratory tract. The sample of

In instances in which milk supplies appeared to be responsible for the occurrence of outbreaks of disease, as referred to later, the milk had been stored for some time or was inadequately refrig-

TABLE II. COMPARATIVE RESULTS FROM THE USE OF DIFFERENT MEDIUMS FOR THE ISOLATION OF ALPHA STREPTOCOCCI IN SERIAL DILUTION CULTURES OF PASTEURIZED MILK

Method of inoculation	Mediums	Incidence of growth in serial dilution cultures of pasteurized milk						
		10^{-1}	10^{-3}	10^{-5}	10^{-7}	10^{-9}	10^{-11}	10^{-13}
Separate pipet at each dilution	Dextrose-brain broth to soft dextrose-brain agar*	Str.,† G + bac.	180 str.	Str.	0	0	0	0
	Soft dextrose-brain agar to dextrose-brain agar	Str., G + bac.	110 str.	3 str.	0	0	0	0
	Dextrose broth to soft dextrose agar*	Str., G + bac.	40 str.	0	0	0	0	0
	Milk-tryptone agar to milk-tryptone agar	G + bac., str.	4 G + bac.	0	0	0	0	0
Same pipet for all dilutions	Dextrose-brain broth to soft dextrose-brain agar	Str., G + bac.	120 str.	Str.	1 str.	0	0	0
	Soft dextrose-brain agar to dextrose-brain agar	Str., G + bac.	110 str.	12 str.	0	0	0	0
	Dextrose broth to soft dextrose agar	Str., G + bac.	40 str.	0	0	0	0	0
	Milk-tryptone agar to milk-tryptone agar	G + bac., str. 0	3 G + bac.	1 G + bac.	0	0	0	0

*Alternate tubes of the respective mediums were used.
†Str. = streptococci; G + bac. = gram-positive bacilli.

pasteurized milk cultured, in serial dilutions at steps of 10^{-2}, the results of which are shown in Table II, was obtained in the open market and cultures were made immediately. Colony counts, by plating 1 c.c. of a 1:100 (10^{-2}) dilution in milk-tryptone agar, revealed four colonies of bacilli or 400 colonies per cubic centimeter of milk and no colonies of streptococci, whereas streptococci grew in dextrose-brain broth and dextrose-brain agar at dilutions up to and including 10^{-5} using separate pipets, and up to 10^{-7} using the same pipet in making the transfers. The samples of raw and pasteurized milk, cultured in serial dilutions at steps of 10^{-4}, the results of which are shown in Table III, represent a pool of twelve samples of raw milk and the same twelve samples after pasteurization in the laboratory. It will be noted that growth of streptococci occurred in cultures of both the raw and pasteurized milk in the brain-containing mediums more often and in higher dilutions and in larger numbers than in corresponding dilutions in the standard medium, milk-tryptone agar, used routinely for determining the bacterial content of dairy products.[1]

erated. Hence, studies were made with my methods to determine whether virulent pneumococci or streptococci added to milk and whether streptococci or other organisms already present in the milk might multiply when kept at standard refrigerator temperatures. Results of these studies are well illustrated in Table IV. Separate, previously sterilized wires were used in making serial dilution cultures in soft dextrose-brain agar and milk-tryptone agar. The sample of pasteurized milk was obtained on the open market during a mild outbreak of infections of the respiratory tract. Twenty cubic centimeter amounts of pasteurized milk were placed in a series of test tubes and approximately 10,000 virulent pneumococci or streptococci were added per cubic centimeter. Dilution cultures at 10^{-4} and 10^{-8} were made immediately and again after storage at 10° C. for forty-eight hours. Estimates of the number of colonies of pneumococci or streptococci that grew in dextrose-brain agar and in the milk-agar plates were made after the respective cultures had been incubated for forty-eight hours. It was found (1) that the number of colonies of pneumococci or streptococci that grew

TABLE III. COMPARATIVE RESULTS FROM THE USE OF DIFFERENT MEDIUMS FOR THE ISOLATION OF ALPHA STREPTOCOCCI IN SERIAL DILUTION CULTURES OF CORRESPONDING SAMPLES OF RAW AND PASTEURIZED MILK

Milk	Method of inoculation	Mediums (alternating)	Time	Growth in serial dilution cultures of milk supplies: Raw 10^{-4}	Raw 10^{-8}	Raw 10^{-12}	Raw 10^{-16}	Raw 10^{-20}	Raw 10^{-24}	Raw 10^{-28}	Pasteurized 10^{-4}	Pasteurized 10^{-8}
Undiluted	Separate sterile wire at every transfer	Dextrose-brain broth to soft dextrose-brain agar		Str.,* GO+ bac.	22 str.	Str.	0	0	0	0	Str., GO+ bac.	2 str.
		Soft dextrose-brain agar to dextrose-brain agar		Str., GO+ bac.	30 str.	1 str.	0	0	0	0	130 str.; GO+ bac.	0
		Milk-tryptone agar to milk-tryptone agar		GO+ bac., few str.	2 GO+ bac.	0	0	0	0	0	18 GO+ bac.	0
Diluted 1:100 in water	Same wire, not sterilized between transfers	Dextrose-brain broth to soft dextrose-brain agar	Immed.†	Str., GO bac.	50 str.	Str.	20 str.	Str.	18 str.	Str.	Str.	1 str.
			30 min.‡	Str., GO bac.	25 str.	Str.	6 str.	Str.	0	0	Str.	0
		Soft dextrose-brain agar to dextrose-brain agar	Immed.	Str., GO bac.	40 str.	0 str.	4 str.	6 str.	10 str.	0	12 str.	1 str.
			30 min.	Str., GO bac.	12 str.	0	2 str.	0	0	0	4 str.	0
		Milk-tryptone agar to milk-tryptone agar	Immed.	34 col., few str.	0	0	0	0	0	0	12 col., str. 0	0
			30 min.	36 col., few str.	2 GO bac.	0	0	0	0	0	10 col., str. 0	0

*Str. = streptococci; GO, G+ bac. = gram-negative or gram-positive bacilli.
†Serial dilution cultures of milk were made immediately after dilution of the milk in water.
‡Serial dilution cultures of milk were made 30 minutes after dilution of the milk in water.

at dilutions of both 10^{-4} and 10^{-8} in the test cultures made immediately and after refrigeration at 10° C. for forty-eight hours was far greater in soft dextrose-brain agar than in milk-tryptone agar; (2) that the number of colonies of pneumococci or streptococci that grew at 10^{-8} was far greater after the milk to which these organisms were added had been refrigerated for forty-eight hours than in cultures made immediately, and (3) that the streptococci which had resisted commercial pasteurization also grew at refrigerator temperature.

The incidence of growth of alpha streptococci and of gram-positive and gram-negative bacilli in serial dilution cultures, alternately in dextrose-brain broth and dextrose-brain agar, of milk supplies in relation to epidemics of encephalitis, poliomyelitis, infections of the respiratory tract including influenza, and hiccup and to periods remote from epidemics is shown graphically in Figure 1. Each dilution culture was made with the same sterile pipet or with the same wire sterilized only before and after the first transfer. It will be seen (1) that incidence of growth of streptococci was higher from raw than from pas-

TABLE IV. GROWTH OF VIRULENT PNEUMOCOCCI AND ALPHA STREPTOCOCCI IN PASTEURIZED MILK AT 10°C.

Pasteurized milk +10,000 virulent pneumococci or streptococci per cubic centimeter		Results of serial dilution cultures in: Dextrose-brain agar, Immediately after inoculation of milk; Colonies of pneumococci or streptococci at dilutions of 10^{-4}	Dextrose-brain agar, Immediately after inoculation of milk; Colonies of pneumococci or streptococci at dilutions of 10^{-8}	Dextrose-brain agar, After storage of milk for 48 hours at 10°C.; Colonies of pneumococci or streptococci at dilutions of 10^{-8}	Milk-tryptone agar, Immediately after inoculation of milk; Colonies of pneumococci or streptococci at dilutions of 10^{-4}	Milk-tryptone agar, Immediately after inoculation of milk; Colonies of pneumococci or streptococci at dilutions of 10^{-8}	Milk-tryptone agar, After storage of milk for 48 hours at 10°C.; Colonies of pneumococci or streptococci at dilutions of 10^{-8}
Pneumococci	Type I	90	3	22	10	0	10
	Type II	8	0	90	0	0	15
	Type III	90	2	48	50	0	17
Alpha streptococci	A	720	3	20	0	0	12
	B	250	1	80	150	0	8
	C	320	2	50	80	0	4
	D	380	45	40	120	0	7
	E	850	8	80	0	0	14
	F	220	4	35	50	0	12
Control; uninoculated pasteurized milk		3	0	12	0	0	3

teurized milk supplies during epidemics of encephalitis and remote from epidemics; (2) that the incidence of growth of streptococci from raw milk supplies cultured during epidemics of encephalitis, while about the same in low dilutions, was much greater in high dilutions than in corresponding cultures from raw milk supplies remote from epidemics; (3) that growth of streptococci from pasteurized milk supplies was consistently much higher, in both low and high dilutions, during epidemics of encephalitis, poliomyelitis, infections of the upper respiratory tract including influenza, and hiccup, than remote from epidemics; (4) that the incidence of growth of gram-positive and gram-negative bacilli from pasteurized milk supplies in the different dilutions, but especially in high dilutions, was far less than of streptococci and was about the same for epidemic and nonepidemic periods, and (5) that the average number of colonies of streptococci that grew in high dilutions in dextrose-brain agar was higher for raw than for pasteurized milk supplies, both during and remote from epidemics of encephalitis.

The control colony counts, by the standard agar plate method, of samples of milk subjected to serial dilution cultures in the experiments summarized in Figure 1 and in many other experiments were usually well within prescribed limits. Streptococci almost never grew in the standard milk-agar plates at dilutions of more than 1:1,000 and never at dilutions greater than 10^{-8} in serial dilution cultures made in this medium, whereas corresponding dilution cultures made in the brain-containing mediums often yielded streptococci in far greater dilutions. Staphylococci were isolated infrequently from pasteurized milk. They were isolated more often from raw milk in low dilutions, but only occasionally in high dilutions.

The growth of streptococci in dilutions far greater than those believed possible on the basis of mathematical calculations of the original number of streptococci, considering streptococci as inert particles, is thought to be due to either "biogenesis" or growth of submicroscopic units while the dilutions are made or to differential adhesion of the streptococci, as such, or of submicroscopic components, to the wire or to the surface of the pipets used in making the dilutions. The dilutions, as indicated, represent dilution of fluids and not necessarily of organisms.

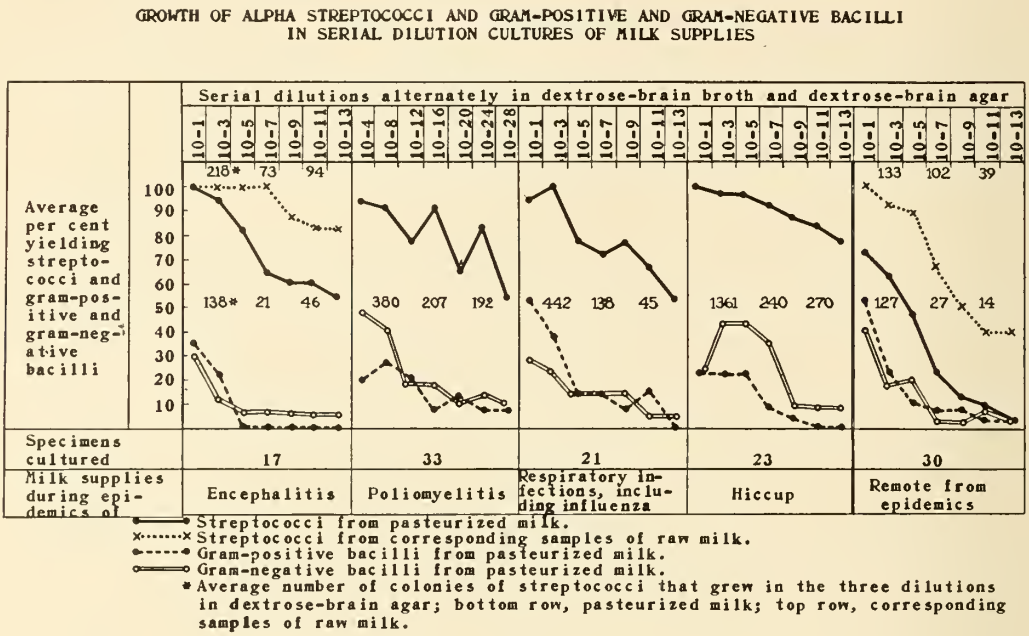


Fig. 1.

(To be concluded in July issue.)

MINNESOTA MATERNAL MORTALITY STUDY

General Summary

By the Maternal Mortality Committee of the Committee on Maternal Health of the Minnesota State Medical Association

From July 1, 1941 through June 30, 1942 a State-Wide Maternal Mortality Study was carried out through funds provided by the Division of Child Hygiene, Minnesota Department of Health, from regular allotments administered by the Children's Bureau, U. S. Department of Labor, under the provisions of the Federal Social Security Act.

This was made a coöperative enterprise of the Minnesota State Medical Association and the Minnesota Department of Health and was conducted by a group of physicians known as the Minnesota Maternal Mortality Committee. The committee members, selected from different parts of the state, served without remuneration and were appointed by the two sponsoring organizations, the Maternal Health Committee of the State Medical Association acting for its parent organization and actually motivating the study. The committee met as often as necessary to formulate plans and to review each case study. A staff of three young, well-trained obstetricians was maintained to carry on the field work of the study and met with the committee in order to supply additional information about case studies if possible and when requested by committee members.

Reports of maternal deaths were made directly, or through the Division of Birth and Death Records and Vital Statistics, to the Division of Child Hygiene of the Minnesota Department of Health. The investigator was promptly dispatched to the physician signing the death certificate and obtained an exhaustive study from the physician and all other persons and records made available by the physician. Actually a 20-page questionnaire was filled out and the case study summarized. The record was next reviewed by a committee member and again summarized in detail. Finally, the study was presented to the committee as a whole and always as an anonymous case. At this time the cause of death was ascertained from the study, preventability determined, responsibility for death affixed, et cetera, before the case was closed.

The following tables, figures and comments comprise only the general statistical report. An important fund of information is contained in these case studies and many aspects of the study will be presented elsewhere in more detail. In interpreting the details of this report, it must be borne in mind that the study is made up only of those patients who *died* during this period. There is no justification for assuming that the information obtained represents in any way a sample of the practice of obstetrics in the State of Minnesota. By the same token, there is no information available at present which would justify a complacent attitude. Until such information is forthcoming, it would be prudent to consider the obstetrics situation as manifested in this report as at least indicating the direction in which efforts at improvement should be pointed.

TABLE I. SOURCE OF REPORTING OF MATERNAL DEATHS

	No. of Cases	Per Cent of Cases
Division of Vital Statistics	69	61.6
City Health Departments	20	17.8
Hospitals	7	6.2
Matching Birth and Death Certificates	7	6.2
Physicians	6	5.4
District Health Departments	2	1.8
Social Welfare Organizations	1	0.9
Totals	112	99.9

The source from which maternal death reports were obtained is recorded in Table I. At the time the study was begun, each physician, hospital, city health department and district health department in the State of Minnesota was requested each to report maternal deaths to the State Department of Health promptly by telephone or letter in order that the cases might be studied while the unrecorded facts surrounding the deaths were still fresh in the memories of physicians, hospital attendants, etc., caring for the patient in her last illness. The normal course of reporting through the Division of Birth and Death Records and Vital Statistics of the Minnesota Department of Health would mean that each report could be a month or more old before it reached the attention of the committee, thus decreasing materially the value of the individual study. This delay was not avoided in seventy-six instances, or 67.75 per cent of the 112 cases. Only thirty-six, or less than one-third, were promptly reported to the Division of Child Hygiene of the Minnesota Department of Health.

Special attention must be called to the seven cases which were discovered by the Division of Birth and Death Records and Vital Statistics in matching birth and death certificates. The current death certificate form requests mention of pregnancy if such has occurred within three months of the maternal death. For the express purpose of determining the percentage of maternal deaths lost each year as a result of the failure on the part of the signer of the death certificate to answer accurately this question, the following arduous task was undertaken by the staff of the Division of Birth and Death Records and Vital Statistics. The death certificate of each female dying during the childbearing years, 15 to 49 inclusive, was taken to the files of birth certificates and these were searched to determine whether a birth had been registered under the name of the deceased within three months of the date of death. As noted above, this search brought to light

seven cases in the twelve months of the study. In other words, the maternal death rate as determined from the death certificates for the full year represented by this study would be understated by 6.25 per cent. Moreover, the implication is that the Minnesota

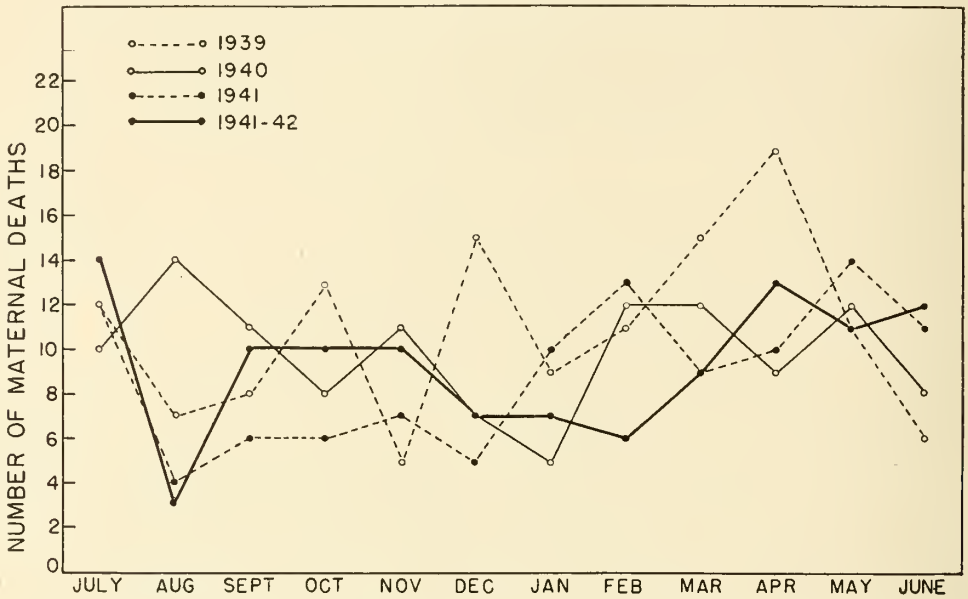


Fig. 1. Number of maternal deaths in each month for the year of this study (1941-42) compared with maternal deaths by months for the years 1939, 1940 and 1941. The annual maternal mortality rates (deaths per thousand live births) were: 1939, 2.7; 1940, 2.2; 1941, 2.0; 1941-42, 2.06.

maternal mortality rate each year is being underestimated by approximately 0.13 points. The 1941 rate of 2.0 should in reality be 2.13 maternal deaths per 1,000 live births. Whether a similar error exists in other states and in the United States Census Bureau reports should be determined by tests of the accuracy of death certificates similar to the test utilized in this study.

Further analysis of these seven cases reveals nothing but carelessness to account for omission of mention of the recent pregnancy on the death certificates. In fact, in three cases an obstetrical complication was the immediate cause of death; in two others, it was pulmonary tuberculosis with death occurring in state sanitoria, in one there was bowel obstruction from undiagnosed carcinoma of the transverse colon, and in the other carcinomatosis from a malignant melanoma of the scalp. In only one instance was delivery attended by a physician or institution other than the one recording the maternal death. Delivery and death occurred on the same day in one case, three days apart in a second, and less than six weeks apart in two others.

Figure 1 records the number of maternal deaths for each month of this study, July, 1941, through June, 1942. For purposes of comparison, the number of maternal deaths per month for the calendar years 1939, 1940, and 1941 are included in this graph. In the legend are recorded the maternal death rates for each of these calendar years as well as the year of this study. The number of live births per month did not vary within any wide limits and the calculated maternal death *rate* per month for 1941-1942 follows the recorded upward and downward trends of actual maternal deaths. It is thus fair to say that there is no clear-cut seasonal variation for the year of study. The same chance variation is seen in each calendar year included for comparison. There is a tendency for the maternal death rate to be above the average in the late winter and early spring and to be below this level in the fall and early winter. Since infections account for a goodly percentage of maternal deaths, one might have expected higher rates in the months in which upper respiratory infections are more common.

It is of interest to note that the yearly fall in maternal death rate which began more than a decade ago, persisted through 1941. Moreover, mention must be made of the fact that the maternal death rate for the year of this study, namely 2.03, is based on the total number of maternal deaths associated with pregnancy and childbirth, whereas all other figures are calculated after eliminating certain deaths which the U. S. Census Bureau does not recognize as maternal deaths. If this scale, following certain corrections, is also applied to our figures for 1941-42, the resultant rate would be lower than stated above and would be comparable to all other quoted and calculated rates. We are unable to supply the corrected figure since we do not know which cases the Statistician of the Minnesota State Department of Health has corrected out.

In consideration of race of the patients in this study, half-breed Indians and negroes are classified with the

TABLE II. AGE OF MOTHER AT LAST BIRTHDAY

Age of Parent	No. of Cases	Per Cent of Cases
15-19	3	2.7
20-24	21	18.8
25-29	26	23.2
30-34	17	15.2
35-39	28	25.0
40-over	17	15.2
Totals	112	100.1

full-blooded members of those races. Analysis reveals one negress, five Indians, and 106 white women. The numbers in the first two groups are too small to allow significant conclusions.

Age of the mother at her last birthday is recorded in Table II. Of the patients in the oldest age group, seven were forty years old on their last birthdays, four were forty-one, four were forty-two, and one each was forty-four and forty-six years old. We do not at present know the age grouping of the mothers of all live births in the state for this study period so that the value of these figures is not clear. One would suspect that they correspond to those of this study. In view of Eastman's[1] contention that the hazards of child-bearing in the grand multipara, and therefore in the aging patient as well, are tremendously increased, we would like to be able to verify or to refute the statement by the figures of this study. It does seem significant, however, that 40 per cent of the mothers losing their lives in association with pregnancy and childbirth were more than thirty-four years old.

Yerushalmy, Palmer, and Kramer[6] have shown a definite increase in the "puerperal fatality rate" with each older age bracket. Under twenty years of age this rate was 1.5 per 1,000 total deliveries, at thirty through thirty-four years it was 3.3, and at an age of forty or more years it was 7.5. Peckham's figures[3] follow the trends shown by Yerushalmy except that in the former's smaller series there is a high rate in the youngest age bracket.

As for marital status of each mother, 106 were said to have been married and six unmarried. All married mothers were declared to have had legitimate pregnancies. Yerushalmy, Kramer, and Gardner[4] showed that unwed mothers who were delivered of viable offspring were exposed to fatality rates which were practically the same as those of married mothers. The infants of the unmarried mothers, on the other hand, had mortality rates which were fully twice as great as for the infants of combined married and unmarried mothers.

Delivery occurred in a hospital in sixty-eight or 61 per cent of the 112 instances and in the home twenty-one times (19 per cent) while twenty-three, or 20 per cent, died undelivered.

Place of delivery is recorded in Table III with place of death. The great majority of deaths occurred at the institution of admission for delivery

TABLE III. PLACE OF DEATH TABULATED WITH PLACE OF DELIVERY

Place of Death	Place of Delivery		No.	Per Cent
Urban Hospital			52	46.4
	Hospital	35		
	Home	5		
	Died undelivered	12		
Rural Hospital			48	42.8
	Hospital	31		
	Home	9		
	Died undelivered	8		
Home			12	10.7
	Hospital	2		
	Home	7		
	Died undelivered	3		
Totals			112	99.9

TABLE IV. PARITY OF MOTHERS DYING DURING PREGNANCY, LABOR OR THE PUERPERIUM

			No.	Per Cent
Primiparas			36	32.1
	Primigravidas	33		
	Essential primiparas	3		
Multiparas			76	67.9
	Para 1	21		
	2	13		
	3	11		
	4	7		
	5	4		
	6	4		
	7	5		
	8	6		
	9	1		
	10	1		
	12	1		
	14	1		
	15	1		
Totals			112	100.0

or care in the last illness. Minnesota had a 20 per cent higher incidence of hospital deliveries than did the counties of Maryland (Peckham[3]), and death occurred in a hospital in less than two-thirds of the latter cases while 90 per cent of Minnesota's maternal deaths occurred in hospitals.

In the following consideration of parity, the current pregnancy is not included, primiparas includes both primigravidas and essential primiparas, and multiparity includes prematures as well as postmature and full-term deliveries. The full value of these figures cannot be determined since the parity of all mothers giving birth to living children in Minnesota during the year of this study is not known. The small number of grand multiparas here might suggest that Eastman's contention[1] is not verified in this series of maternal deaths. It will be recalled that his material presented a gross maternal mortality rate of 4.2, with the rate in the lower parity brackets (I to V) ranging between 3.55 and 3.78 whereas it soared to 11.73 with a parity of nine or more, a threefold increase. In Yerushalmy's[6] larger series, the "puerperal fatality rate" with the first viable pregnancy is higher (2.8) than with the second and third pregnancies (2.0 and 1.9 respectively) but with increasing parity above these grades, the rate

TABLE V. DURATION OF PREGNANCY AT DELIVERY OR AT DEATH IF THE MOTHER DIED UNDELIVERED

Stage of Pregnancy	Duration of Pregnancy	Died Undelivered	No.	Per Cent
Abortion			23	20.5
	Unknown 1	1		
	4 wks. 1			
	5- 8 wks. 4	2		
	9-12 wks. 2			
	13-16 wks. 9	3		
	17-20 wks. 4	1		
	21-24 wks. 1	1		
	25-28 wks. 1			
Premature			21	18.9
	29-30 wks. 9	3*		
	31-32 wks. 5	2		
	33-34 wks. 4			
	35-36 wks. 3	1		
Term			53	47.3
	36-38 wks. 21	7*		
	39-40 wks. 32			
Postmature			15	13.4
	41 wks. 8			
	42 wks. 7	2		
Totals		23	112	100.1

*One of these delivered by postmortem cesarean section.

TABLE VI. ATTENDANT AT DELIVERY OF PATIENT.

	No. of Cases	Per Cent	Per Cent Excluding Died Undelivered
Died undelivered	23	20.6	
Unattended	10	9.1	11.2
Self-induced abortion	3	2.8	3.4
Nurse	1	0.9	1.1
Locum tenens physician	1	0.9	1.1
Physician in general practice	54	42.3	60.7
Obstetrician	12	10.1	13.5
American Board Diplomates 10			
Self-styled 2			
Resident house officer	8	7.2	9.0
Totals	112	99.9	100.0

TABLE VII. CONDITION OF PATIENT UPON HOSPITALIZATION OR WHEN FIRST SEEN RELATIVE TO LAST ILLNESS

	No.	Per Cent
Well	43	38.4
Ill	63	56.2
Critically ill	4	3.6
Dead	2*	1.8
Totals	112	100.0

*One of these was apparent suicide and the other either suicide or homicide.

rises appreciably as shown by Eastman, but with the greatest rate in the para VIII and IX group (6.3) and a fall to 4.4 in the group of para X and over.

Duration of pregnancy is recorded in Table V and refers to weeks of gestation at the time of delivery or of death if the latter preceded delivery. Abortion was diagnosed whenever the pregnancy had not advanced through the twenty-eighth week or, where no accurate menstrual history was available, when the fetus weighed less than 1500 grams and measured less than 35 cm. in crown-heel length. The extra-uterine pregnancies are all included under abortions since none of the ectopics were carried to fetal viability. In the absence of a reliable menstrual history, a pregnancy was considered to have carried to term when the fetus weighed at least 2500 grams (5½ pounds) or measured at least 45 cm. in total length. A fetus was considered postmature when it weighed at least 4000 grams (9 pounds), although this might better be considered only as excessive size. Peckham[3] found comparable percentages of maternal deaths associated with abortions, prematures and term deliveries, but recorded no postmature deliveries. Yerushalmy[6] found the puerperal fatality to be seven times as high when pregnancy terminated prematurely as when delivery was at term. It will be seen that we had three times as many maternal deaths associated with term and postmature as with premature deliveries. However, since the incidence of the latter deliveries is low, it is conceivable that our maternal mortality rates in these groups might confirm Yerushalmy's figures for "puerperal fatality" rates. We do not have for comparison the incidence of premature deliveries in Minnesota.

Attendant at delivery is given in Table VI. The delivery was considered unattended whenever there was no supervision for delivery of the child even though a physician may have arrived for delivery of the placenta. The incidence of unattended deliveries, actually 11.2 per cent when patients who died undelivered are excluded, is surprisingly high. No patients were delivered by midwives, all attendants at delivery being physicians except in one instance when a nurse functioned in the absence of the physician, and in the three admitted self-induced abortions. In Maryland, where midwives attend many deliveries in the outlying counties, Peckham[3] noted that one out of every fourteen maternal deaths was chargeable to midwives.

Condition of the patient upon hospitalization or when first seen at house or office relative to the last illness is shown in Table VII. The interpretation placed upon the condition of the patient was most liberal. For example, there were many patients who had been seen for prenatal care, whose records showed abnormalities which should have been further investigated but who were allowed to go home, and when next seen were not well but ill or even critically ill. In these instances the condition of the patient when next seen was applied to the case. Even with this liberal interpretation, the fact that forty-three patients (38.4 per cent) were well when first seen and died later is startling.

The adequacy of consultation is recorded in Table VIII. A consultation was considered adequate when the patient was actually seen and examined by the

TABLE VIII. ADEQUACY OF CONSULTATION

		No.	Per Cent
None		63	56.2
Adequate throughout		10	9.1
Inadequate		39	34.8
By obstetrician	11		
By other specialist	7		
By other general practitioner	19		
By general surgeon	2		
Totals		112	100.1

TABLE IX. PRESENTATION AND POSITION OF FETUS WITH DURATION OF PREGNANCY

Presentation and Position		Duration of Pregnancy	No.	Per Cent
Vertex			62	55.3
		Premature 11		
		Term 38		
		Postmature 13		
Others			10	9.1
Breech	7			
		Premature 3		
		Term 4		
Transverse	2			
		Premature 1		
		Term 1		
Face (postmature)	1			
Unknown			40	35.7
		Abortions 17		
		Premature 6		
		Term 10		
		Postmature 1		
		Ectopic 6		
Totals			112	100.1

consultant and when he recognized the minimum standards as set down by this Committee. "Curbstone" consultations were included though always placed in the inadequate group. The absence of any consultation in 56 per cent of the cases, the presence of less than 10 per cent adequate consultations, and the inadequacy of two-thirds of the consultations which were obtained raises certain obvious questions. There can be no reasonable doubt but that a considerable number of these patients would not have died, had reasonably efficient consultation been obtained and reasonable therapy instituted. This must have been the experience with other maternal mortality studies since several states have instituted means of supplying consultation for all obstetric complications. One of these systems was instituted in 1937 by the State Department of Health in Connecticut[2] but the effects upon the maternal mortality rate are not known. Perhaps the best of these has been organized in the City of Chicago. This method of reducing the maternal mortality rate may not produce the desired results, for one-half of the inadequate consultations in our series were supplied by specialists, men who by training and experience should be capable of furnishing superior counsel.

Presentation and position of fetus with duration of pregnancy are recorded in Table IX. The value of

TABLE X. OUTCOME TO CHILD AND DURATION OF PREGNANCY

Outcome to Child	Duration of Pregnancy	No.	Per Cent
Born alive and survived		46	41.1
	Premature 2		
	Term 37		
	Postmature 7		
Born alive and died neonatally		7	6.2
	Premature 5*		
	Term 2		
Stillborn		23	20.5
Macerated 9			
	Premature 4		
	Term 4*		
	Postmature 1		
Non-macerated 14			
	Premature 5		
	Term 4		
	Postmature 5		
Ectopic gestation		6	5.4
Abortions		17	15.2
Others (died undelivered, et cetera)		13	11.6
	Premature 5		
	Term 6		
	Postmature 2		
Totals		112	100.0

*Includes one postmortem cesarean section.

these figures is not clear without knowing the incidence of the various presentations and positions in all deliveries of living children in Minnesota for the period of the study. In breech, face, and transverse presentations, the incidence of placenta previa, infection, et cetera, was no greater than in the vertex positions.

From Table X it is seen that only 41 per cent of the deliveries associated with maternal deaths terminated in the birth of a living child, 26.7 per cent ending in stillbirths or neonatal deaths, and 11.6 per cent dying undelivered with viable pregnancies. Considering all viable fetuses, a stillborn and neonatal death rate of 38.3 per cent was obtained. These figures coincide with those of Peckham.[3] Yerushalmy[4] found a strong association between death of mother and loss of offspring. His "puerperal fatality" rate was two per 1,000 total deliveries when the infant was born alive and thirty when the infant was born dead. The rate was 1.7 for mothers whose infants survived the neonatal period and eleven for mothers whose infants died under one month of age. Similarly, the stillbirth rate was 27.0 per 1,000 total births for infants of surviving mothers and 300.4 for infants whose mothers died in childbirth. The corresponding neonatal mortality rates were 22.8 and 167.3 per 1,000 live births.

The type of delivery is recorded with duration of pregnancy in Table XI and total operative procedures appear in Table XII. The first of these tables shows the unfortunately high incidence of operative deliveries, 56.2 per cent of the patients who delivered before death. This is considered unfortunate since some of the deaths resulted directly from the operative procedures. In some instances there was no indication for operation, while in others ill-advised operative procedures were done or attempted. The average number of operative procedures done or attempted per operated

TABLE XI. TYPE OF DELIVERY WITH DURATION OF PREGNANCY

Type of Delivery	Duration of Pregnancy	No. of Cases	Per Cent of Cases	Per Cent Omitting Died Undelivered
Died undelivered		23	20.5	
	Ectopic gestation 3			
	Abortion 5			
	Premature 6*			
	Term 7*			
	Post-mature 2			
Spontaneous		39	34.8	43.8
	Abortion 10			
	Premature 6			
	Term 19			
	Post-mature 4			
Operative		50	44.6	56.2
	Ectopic gestation 3			
	Abortion 2			
	Premature 9			
	Term 27			
	Post-mature 9			
Totals		112	99.9	100.0

*Includes one postmortem cesarean section.

patient was 1.5. Peckham's series[3] presented a lower incidence of deaths before delivery (10 per cent) and higher incidence of spontaneous deliveries (60 per cent).

It is not possible in this statistical survey to discuss completely the field of operative procedures done or attempted in this series. Separate communications will follow and will detail this phase of the study. Minor comments, however, cannot be avoided here.

One-third of the patients with fatal extra-uterine pregnancies died without laparotomy because of delay in hospitalization or institution of therapy for hemorrhage and shock. One of those operated upon did not have a salpingectomy performed but instead a "ligation of the fallopian tube." Hemorrhage continued and was soon followed by death. Both of the remaining two who had salpingectomies performed also had appendectomies done. One of these operations was followed by peritonitis and death but the primary cause of death in the other was alkalosis due to prolonged gastric or duodenal suction without replacement of fluids or salt. The sixth patient with a tubal pregnancy had an appendectomy performed without exploration of the pelvic organs in spite of a history suggestive of pregnancy. Death, which was due to peritonitis, occurred ten days after appendectomy and the unruptured tubal pregnancy was discovered at autopsy. Two patients were delivered by postmortem cesarean section. From one of these a term but stillborn and macerated fetus was obtained. The other fetus, which was delivered after maternal death due to pneumonia, was premature (thirty weeks' gestation) and succumbed soon after its delivery.

The presence of three instances of mid forceps, four of successful or attempted high forceps deliveries and ten of podalic version as compared to fourteen low forceps deliveries appears to be evidence of radical obstetrics. This is all the more apparent when one investi-

TABLE XII. TOTAL OPERATIVE PROCEDURES DONE OR ATTEMPTED UPON FIFTY-FOUR PATIENTS

Operation	No. of Operations	Per Cent of Operations
Surgical induction of labor	5	6.1
Bag, Voorhees 3		
Membrane rupture 2		
Dilatation and curettage	3	3.7
Low forceps delivery	14	17.3
Mid forceps delivery	3	3.7
High forceps delivery (two unsuccessful)	4	4.9
Breech extraction	3	3.7
Manual "dilatation" of cervix	7	8.6
Podalic version with extraction	10	12.3
Hysterectomy (excluding one radical C.S.)	1	1.2
Cesarean section	12	14.8
Elective 7		
Nonelective 5		
Craniotomy, after-coming head (hydrocephalus)	1	1.2
Ligation fallopian tube (tubal pregnancy)	1	1.2
Salpingectomy with appendectomy (tubal pregnancy)	2	2.5
Appendectomy (associated with tubal pregnancy)	1	1.2
Manual removal of placenta	4	4.9
Tamponade of vagina (placenta previa)	2	2.5
Tamponade of uterus	6*	7.4
Postmortem cesarean section	2	2.5
Totals	81	99.7

*Two patients had their uteri packed twice.

gates certain operative deliveries. In one case, high-forceps delivery was done on a macerated fetus, the patient being in diabetic acidosis. In another, high-forceps delivery was attempted upon an undiagnosed hydrocephalic fetus and when this operation failed, version was followed by craniotomy to the after-coming head. One patient with outspoken cardiac failure had delivery attempted by high forceps but accomplished by version and extraction when the umbilical cord prolapsed. In two instances podalic version was done after long labors with premature rupture of membranes and a macerated fetus was delivered in each instance. Three patients with placenta previa were delivered hastily by version with extraction and none of these had had preliminary treatment with an intra-uterine bag. In one instance, mid-forceps delivery attempted without an indication was followed by version and death due to hemorrhage from extensive unrepaired lacerations of the whole birth canal. Podalic version was done once because of a transverse presentation which was not diagnosed until late in labor although the patient was hospitalized and "seen" early in labor. In a patient who had been in an automobile accident, which resulted

TABLE XIII. ADEQUACY OF POSTMORTEM EXAMINATIONS

Type of Autopsy	No.	Per Cent	
Obtained, adequate	9	8.0	32.1%
Obtained, inadequate	27	24.1	
Not requested by physician	55*	49.1	67.9%
Requested but refused	21	18.8	
Totals	112	100.0	

*Includes three cases which should have had autopsies demanded by the coroner since each was unexplained suicide or homicide.

in an unexplored acute abdomen, delivery was effected by version and extraction. Autopsy revealed a ruptured uterus which may have followed either the accident or the operative delivery.

In this last-named case, in one of the patients with prolonged labor and premature rupture of the membranes, and in three with placenta previa, delivery was preceded by manual "dilatation" of the cervix. A fourth patient with placenta previa was delivered by breech extraction after manual "dilatation" of the cervix. Only one of these four patients with placenta previa survived beyond the immediate puerperium, and she died of puerperal sepsis eleven days later. The seventh patient upon whom manual "dilatation" of the cervix was carried out was admitted to a rural hospital in cardiac failure with advanced arteriolosclerosis. An attempt to induce labor immediately by membrane rupture (thirty-nine weeks' gestation) was not promptly successful and manual "dilatation" of the cervix was carried out after an attempt at high forceps had failed.

The handling of placenta previa was worse than that accorded to any other obstetric complication in this series. This will be reported in detail elsewhere. It is quite clear that some curb must be placed by hospitals upon the treatment of this condition. Indeed, in some instances even this will not be enough.

The cesarean section record in this series must be given serious consideration. Fifteen per cent of the operative procedures were cesarean sections. Five were done from eight to 120 hours after the onset of labor. One classical cesarean section was done after sixty hours of labor. This latter patient succumbed to a postpartum hemorrhage three hours after delivery while death in all others was due to infection and occurred seven to forty-two days after delivery. The elective cesarean sections are equally worthy of note. One patient with preëclampsia superimposed upon an arteriolosclerosis died two hours after delivery because of too long delayed therapy for shock. Two survived the operation by two days to succumb to cardiac failure and to eclampsia which may have been precipitated by intramuscular pituitrin. The remaining four of the seven delivered by elective cesarean section died of infection, eight, fifteen and sixteen days, and nineteen weeks after delivery. In the last of these peritonitis followed non-surgical treatment of small bowel obstruction. The many other details of these cesarean section deaths will be reported separately.

The poor showing as regards postmortem examinations is depicted in Table XIII. Only 8 per cent of the cases had autopsies which could be considered adequate, i.e., complete enough, as determined from symptomatology, to arrive at a reasonably accurate cause of death. Three times as many were incomplete on cursory examinations, or were so poorly performed that even the examiner could not give an accurate gross description of the lesion or the tissues. In one-half of the cases, the attending physician did not request permission for autopsy. The evasive answers to this part of the questionnaire make it certain that in many of the remaining 19 per cent, in which postmortem examination is said to have been requested but refused by responsible relatives, the physician made no honest effort to obtain permission for the examination. Interrogations to the question of whether an autopsy was performed, brought such replies as: "We have no pathologist available," "autopsies are not generally done in this community," and "I would have had to do it myself and just don't have time." It appears that in certain localities in the state it is customary to charge a fee for postmortem examination, since several replies stated that the family "could not afford" such an examination. In one instance the consultant was certain that death was due to peritonitis following an elective cesarean section but the family physician refused to request permission for autopsy, saying that "what the family didn't know wouldn't hurt them."

The failure of coroners to perform their duties and to request or demand postmortem examinations on those patients dying under circumstances suggestive of violence is outstanding. In one instance, death is believed to have been due to suicide (veronal poisoning). A cursory postmortem examination was done and the cause of death given on the death certificate as diabetes "in order to save the family the disgrace of a suicide death." There was apparently no investigation by a law-enforcement body and the suicide is only inferred from meager data. In a second instance, a young woman said to have been healthy was found dead on a sleeping porch adjoining the bedroom occupied by her and her husband. The latter was not aroused during the night but made the discovery upon arising the next morning. Postmortem examination was not requested or ordered and no investigation was held. The death certificate was signed by the coroner and the assigned cause of death was fictitious, the physician who had supplied prenatal care attempting to supply an explanation for death without seeing the corpse. In the third instance, a patient who had postpartum sepsis, eclampsia, and psychosis was missing from her hospital room one afternoon. Her body was discovered the following morning in a nearby lake. Postmortem examination was neither requested nor ordered and no investigation was held.

(To be concluded in July issue.)

CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

J. B. Arey, M.D., and D. H. Taylor, M.D., Pathologists

Presentation of a Case

Dr. Eichhorn: This is the case of a twenty-year-old white man who was admitted to the Minneapolis General Hospital on January 26, 1944. Three months prior to admission he had developed persistent pain in his left shoulder. This was aggravated by motion, at times by deep breathing, and was occasionally accompanied by night sweats, fever and generalized malaise. Three days prior to admission he noted pain, heat and swelling of the left fourth toe, and on the day of admission tenderness was noted in the left ankle.

Past history revealed that the patient had been hospitalized at the age of eleven years because of multiple joint pains, anorexia and progressive fatigue of two months' duration. Physical examination at that time revealed a systolic murmur at the apex, and x-rays were interpreted as showing a mitral type of configuration of the heart. Although it was recommended that he restrict his activities, this advice had apparently not been followed.

Physical examination on his last admission to the hospital revealed a temperature of 104, pulse 120 and blood pressure 174/70. The heart was enlarged to the left on percussion, the rhythm was regular. There was a blowing, high-pitched diastolic murmur audible in the second right interspace, transmitted down along the left sternal border. There was a systolic murmur over both aortic and mitral areas; no diastolic murmur was audible over the mitral area. Duroziez sign was positive, and a capillary pulse was present. The left fourth toe was slightly swollen, red and tender. The left knee was tender but did not appear red or swollen. The remainder of the physical examination was essentially negative.

Laboratory examination revealed the following pertinent findings: The serology was negative, hemoglobin 73 per cent, white blood count 12,700 with 86 per cent neutrophiles. The specific gravity of the urine was 1.026; a trace of albumin and occasional pus cells were present. The sedimentation rate was 81 mm. in one hour.

The patient was treated with salicylates, following which the joint pain was immediately relieved. However, his temperature continued to range betweeen 99 and 104. On the fifth hospital day he complained of pain under the left lower ribs anteriorly lasting about three hours. This pain disappeared, only to recur the following day. At this time there was some tenderness and rigidity in the left upper quadrant, but no rebound tenderness was present and no friction rub was audible. Examination of the remainder of the abdomen was essentially negative, the bowel sounds being normal.

The following morning the patient became nauseated and vomited. There was now generalized abdominal tenderness, with some distention and rebound tenderness. The bowel sounds were absent.

The stools were negative for occult blood, and repeated peritoneal aspirations in the left upper and right lower quadrants failed to reveal free fluid. Rectal examination revealed tenderness in the cul-de-sac and in both lower quadrants, but no masses were palpable. His temperature now ranged between 102 and 103 degrees, the white blood count was 19,000 with 88 per cent neutrophiles.

Conservative therapy was instituted and duodenal suction applied. In the course of four to five days the patient's temperature dropped, the abdominal distention and rebound tenderness disappeared. There was some residual abdominal tenderness present for some time. The differential diagnoses considered were generalized peritonitis of a nonspecific type, such as is said to occur with rheumatic infections, mesenteric embolus and rupture of a splenic abscess.

During the aforementioned abdominal episode, three blood cultures were reported as positive for streptococcus viridans. On February 17, 1944, large doses of sulfadiazine were started and hyperthermia therapy was attempted, but the latter was not tolerated. The blood sulfadiazine level was maintained between 30 and 55, but his temperature continued to range between 103 and 104 degrees.

One month after admission, on February 26, 1944, the patient developed headache in the left frontal region. The following morning he complained of weakness of the left arm and leg with paresis of the left side of the face. Neurological examination now showed a sustained ankle clonus on the left, with increased deep reflexes in the left arm. Babinski sign was negative, and no sensory disturbances were noted. Following this cerebral episode the patient's course was progressively downhill. No petechial hemorrhages were noted at any time. Occasional urinalyses showed 18 to 20 red blood cells. The hemoglobin gradually dropped to 40 per cent, the white blood count ranged between 7,000 and 14,000. Another blood culture taken on March 29, 1944, was positive for streptococcus viridans. His temperature continued to rise to 103 and 104 degrees. On the evening of April 5 he suddenly developed marked dyspnea and cyanosis, became comatose, and died within a period of one and one-half hours. No cough or chest pain was noted during this final episode.

Dr. Kaplan: Here is an x-ray of the chest taken shortly after admission. The configuration of the heart

in no way suggests mitral disease. The decided left ventricular prominence suggests instead an aortic lesion. The pulmonary conus is normal; there is no pulmonary congestion.

This is the first film of the abdomen taken during the abdominal episode. There is a rather marked gastrectasia and dilation of several loops of small bowel. In addition, a small amount of gas is present in the large bowel. Because of the absence of dilation of the large bowel the picture is not characteristic of a generalized ileus such as is usually encountered with generalized peritonitis. This would tend to favor a partial or incomplete obstruction or a localized ileus of the small bowel.

Dr. Arey: In summary, this patient undoubtedly had a subacute bacterial endocarditis, probably on the aortic valve. Approximately two months before his death he developed an acute abdominal episode with the clinical signs of a generalized peritonitis. He apparently recovered from this under conservative therapy, but his endocarditis persisted. About one month prior to his death he showed signs of a cerebral accident, presumably on the basis of an embolic lesion. His death was characterized by the sudden onset of coma, dyspnea and cyanosis, with, as far as could be determined, no neurological findings and no chest pain.

Several explanations can be offered for his sudden death. In the first place the presence of subacute bacterial endocarditis is alone sufficient to cause sudden death. With an aortic lesion, a bacterial vegetation might become impacted in the coronary orifice. Other possibilities include rupture of a mycotic aneurysm, coronary embolism and cerebral embolism. With the present findings it is doubtful if an exact cause of the sudden death can be given.

Dr. Kaplan: What about the possibility of a pulmonary embolism? The patient was bedridden and might easily have developed venous thrombi in the lower extremities.

Dr. Arey: This also should be considered as one possibility.

Autopsy

Dr. Eichhorn: The right pleural cavity contained about 1,000 c.c. and the left 700 c.c. of clear straw-colored fluid. The peracardial sac contained about 300 c.c. of similar fluid. The serous surfaces of the pleural and pericardial cavities were smooth and shiny. The heart weighed 520 grams. The left ventricle was markedly hypertophied and somewhat dilated; there was a lesser degree of right ventricular hypertrophy and dilation. On the posterior cusp of the aortic valve was a large friable vegetation 2x1x1 cm. This vegetation extended downwards onto the surface of the anterior mitral leaflets and on section a small aneurysm, about 6 mm. in diameter, passed from the inferior surface of the base of the posterior aortic cusp to a point 2 mm. from the inner surface of the left auricle. This latter aneurysm was directly continuous with the aortic vegetation, and was filled with friable material similar to that of the vegetation. It did not communicate with the sinus of valsalva. The other two aortic cusps contained small friable brownish vegetations and appeared somewhat thickened. There was a small linear rent in the left aortic cusp, surrounded by the aforementioned vegetation. The mitral valve was thickened and fibrous, contained small vegetations, some of which resembled those on the right and left aortic cusps. Other vegetations on the mitral valve more closely resembled fresh rheumatic lesions. The tricuspid and pulmonary valves were free from change. Both coronary orifices were patent. In the left coronary artery there was an occlusive mass, resembling the large aortic vegetation, beginning just proximal to the origin of the circumflex branch and extending for a distance of 1 cm. down the anterior descending branch. This mass was easily removed from the coronary artery, leaving a smooth surface free from atherosclerosis. The remainder of the coronary arteries were free from change. Immediately beneath the endocardial surface of the left ventricle were numerous pin-head sized abscesses. On section the myocardium showed a few minute areas of fibrosis, but no gross infarcts.

The right lung weighed 880 grams, the left 510 grams. The pulmonary arteries were free from emboli, and on section the lungs showed only some congestion and edema.

No free fluid was noted upon first opening the peritoneal cavity. Further examination revealed three large abscesses, all well walled off and distinct from another. One of these measured 5x6x10 cm., and lay at the superior pole of the spleen. This contained about 300 c.c. of thick, creamy, purulent material which was somewhat blood stained. A second and similar abscess, about one-half the size of the former, was located at the lower pole of the spleen. The third abscess occupied the entire minor pelvis and was walled off superiorly by the mesentery. It contained about two liters of purulent material. None of these abscess cavities communicated with the general peritoneal cavity.

The entire gastro-intestinal tract, including the appendix, appeared normal. The spleen (with small portions of the walls of the adjacent abscesses) weighed 500 grams. At both poles were large abscesses within the substance, measuring three to four centimeters in diameter. These were directly continuous with the larger abscesses at either pole of the spleen. In the remaining splenic substance were multiple red and yellow infarcts, as well as several small abscesses.

The liver weighed 1700 grams and showed definite darkening of the centers of the lobules. The right kidney weighed 170 grams, the left 200 grams. No petechial hemorrhages were noted on the surfaces, and except for one old infarct on the right, the organs showed no significant change. There was no permission granted for examination of the head.

Dr. Arey: The abdominal episode which was noted is best explained as a generalized peritonitis subsequent to rupture of a splenic abscess, undoubtedly a suppurative infarct. In time the purulent material localized and became walled off, forming the three abscesses

located at postmortem examination. Although the brain was not examined at postmortem, I believe we are justified in attributing his sudden death to a coronary embolism.

Microscopic Findings

Dr. Arey: This is a section of the vegetation on the posterior aortic cusp. Notice the clumps of bluish-staining material, some of which represent calcium and some bacteria. The valve proper is thickened and fibrous, and in addition shows an acute valvulitis. This is the area of the aneurysm extending almost to the left auricle. It is filled with neutrophiles and thrombotic material similar to that in the vegetation. Notice the very short distance separating it from the endocardial surface of the left auricle.

Here is a section of the anterior descending branch of the left coronary artery just distal to its origin. The wall shows no evidence of atherosclerosis or arteritis. The lumen is filled with material identical with the vegetation on the aortic cusp. Large clumps of calcium and bacteria are present in the embolus, but none are present in the wall of the artery.

This section is of the spleen taken at one pole. Notice the accumulations of neutrophiles, both within the substance and in the abscess, about the spleen. In addition, there are areas of infarction and acute splenitis.

Section of the kidney shows one glomerulus with a fibrous type of focal embolic glomerulonephritis. In addition, there is considerable proliferation of the glomerular endothelium. Although this is quite definite, it is probably better interpreted as a subclinical acute glomerulitis, rather than an actual clinical acute glomerulonephritis.

Sections of the myocardium show Aschoff bodies, areas of fibrosis and abscesses ("Bracht-Wachter Bodies"). About the latter there is some necrosis of the muscle cells.

Discussion

Dr. Arey: Although coronary embolism is probably of more interest pathologically than clinically, as with all other conditions, it will not be diagnosed unless it is kept in mind. Accordingly, I would like to briefly review some of the salient features concerning this condition.

The first recorded case of coronary embolism was that described by Virchow in 1856. In 1933, Saphir reviewed the literature on coronary embolism. Only eleven of the reported cases were accepted by them as proven cases. To this number he added three case reports of his own. In 1940, Porter and Vaughan reported three cases of coronary embolism, all associated with syphilitic aortitis. They reviewed the literature on this subject, accepted seven cases which Saphir had rejected, and brought the total number of collected cases to thirty. In 1941, Hamman reviewed forty cases of coronary embolism, ten of these being from the Johns Hopkins Hospital, the remaining thirty being gathered by a brief and admittedly incomplete review of the literature. Although the criteria used by Hamman often appear inadequate to justify the diagnosis of coronary embolism, the fact remains that this is definitely a rare condition.

The site of origin of a coronary embolus may be any of six different locations. Forty per cent of coronary emboli arise from acute or subacute bacterial vegetations on the aortic or mitral valves. Probably the next most common point of origin is a thrombus covering either an atherosclerotic ulcer or an area of syphilitic aortitis in the root of the aorta. Thrombi in the left auricle or ventricle may rarely result in a coronary embolism. Another reported source of coronary emboli is a partially occluding coronary thrombosis or an atherosclerotic plaque in a coronary artery. Either of these may become detached from the wall of the coronary artery, pass to a point distal to their origin, and result in coronary embolism. Pulmonary vein thrombi are reported as occasionally resulting in coronary embolism, but to date I have found no case in which such a source was proven. Lastly, paradoxical emboli arising in the peripheral veins and passing through a patent foramen ovale may give rise to coronary embolism.

The symptoms of coronary embolism are those of an acute coronary occlusion, and the diagnosis can rarely, if ever, be more than suggested as a possibility. As a rule death occurs suddenly. In patients dying suddenly with previous evidence of bacterial endocarditis, such a possibility may be suggested, but as a rule some other complication will be the responsible factor. In patients having signs of paradoxical emboli, coronary embolism may also be suggested as the cause of sudden death, but pulmonary embolism is a far more common finding. In cases of coronary embolism arising from any of the other sources, it is doubtful if the diagnosis can be made.

The above discussion has referred only to those cases of coronary embolism in which one of the larger coronary arteries is occluded. In addition, the results of multiple emboli in the small branches of the coronary arteries may be briefly mentioned. Such smaller multiple emboli are not infrequent in cases of bacterial endocarditis. De Navasquez collected twenty cases of bacterial endocarditis due to streptococcus viridans and found myocardial lesions were present in nineteen of these. He believed all the myocardial lesions could be explained on the basis of minute emboli to the small branches of the coronary arteries.

Saphir found emboli in the small branches of the coronary arteries in eighteen of thirty-five cases of subacute bacterial endocarditis, but in only one of these was an embolus noted grossly. In twenty-eight of the thirty-five cases, minute infarcts of varying ages were found.

Summary

A case of subacute bacterial endocarditis is reported. This was complicated by suppurative splenic infarcts with peritonitis and multiple peritoneal abscesses. Other embolic phenomena included a coronary embolism, which was the immediate cause of death. A brief summary of the literature on coronary embolism is given.

Diagnoses: (1) Subacute bacterial endocarditis, aortic and mitral valves; (2) coronary embolism; (3) perforation of left aortic cusp; (4) myocardial abscesses and fibrosis; (5) suppurative splenic infarcts; (6) multiple peritoneal abscesses; (7) infarct of kidney; (8) focal embolic glomerulonephritis; (9) chronic passive congestion of liver; (10) bilateral hydrothorax; (11) hydropericardium.

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CLINICAL-PATHOLOGICAL CONFERENCE

ST. LUKE'S HOSPITAL—DULUTH

Arthur H. Wells, M.D., Pathologist

Presentation of a Case

Dr. F. E. Hill: This seventy-three-year-old white man was admitted to the hospital six days before his death with a history of having been subject to attacks of tachycardia for the past eighteen years. Seven years ago he visited the Mayo Clinic where it is said he learned to stop attacks of tachycardia by pressing over the carotid region. At that time his blood pressure was 100/60 and one year later it was 190/120. About one year ago he had an attack associated with edema of the legs at which time he was confined to bed for four or five weeks and was given digitalis. For the past three days he has noticed increased difficulty with breathing, particularly on climbing stairs. He had not slept for two nights and the night before admission he slept sitting up in a chair which seemed to improve his breathing. The carotid pressure failed to improve his cardiac condition on this occasion. When first seen by me his pulse was 168 and irregular. The blood pressure was 120/80. There was a grayish pallor and cyanosis. Rales were heard in the chest with noisy breathing. A high-pitched murmur was heard in the aortic, pulmonic, and tricuspid areas transmitted to the vessels in the left side of the neck and into the left axilla. There was no edema of the extremities. His heart tones were feeble, pulse weak and heart rate increased. X-ray examination revealed cardiac enlargement, pulmonary congestion, right pleural effusion and possible pneumonia in lower portion of right lung. There was conspicuous nausea and vomiting after admission to the hospital. The patient was rapidly digitalized during this period. His temperature gradually rose to 105° during his last three days. There was some retention of urine in the urinary bladder requiring catheterization. In spite of digitalis, aminophyllin, coramine, dilaudid, et cetera, he showed very little evidence of improvement at any time.

Clinical Diagnoses

Dr. D. C. Doughtry: Coronary sclerosis with chronic congestive heart failure.

Dr. A. T. Laird: Calcified aortic valvular disease with chronic congestive heart failure.

Autopsy Findings

Dr. A. H. Wells: Both clinical diagnoses given are correct but they do not include what I consider the most important disease process leading to this patient's death. This was a huge atheromatous plaque at the orifice of the right renal artery which appeared to completely block its lumen. There must have been a tiny opening which I could not demonstrate because the right kidney was uniformly atrophied throughout to a weight of 100 grams, and had an unusually dark, faintly stippled outer surface. The left kidney appeared entirely normal excepting that it was hypertrophied to a weight of 270 grams. Its renal artery had only mild atherosclerotic changes. A severe hypertrophy of the left ventricle of the heart predominantly accounted for its weight of 610 grams. There was a mild hypertrophy of the left ventricle and a grade II dilatation of all four cardiac cavities. The aortic leaflets had a severe fibrosis with many calcified nodules scattered over their surfaces with fusion of two leaflet margins so that there was an estimated grade II insufficiency and stenosis. There was a grade I nodular fibrosis of the contact margins of the mitral leaflet with slight thickening of chordæ tendineæ and no apparent insufficiency. There was also a moderate arteriosclerosis of coronary arteries with a grade II narrowing of their lumina. The myocardium was quite hypertrophied, firm, slightly pale and completely free from fibrosis. Secondary findings were those of chronic congestive heart failure with bilateral hydrothorax, ascites, slight peripheral edema, and chronic passive congestion of the lungs, liver and spleen.

Microscopic Study.—The sections from the right kidney revealed numerous completely scarred glomeruli and rather severe atrophy or decrease in size of tubular structures throughout the sections. There is no thickening of arteriolar walls and only a grade II sclerosis of the arcuate and intralobular arteries. The left kidney has some diffuse but mild dilatation of tubules and no evidence of vascular degeneration of any type. The glomeruli tend to be rather large and congested.

I feel that we have a typical "Goldblatt kidney" which is the probable explanation of this patient's past history of hypertension and the most important cause for his chronic congestive heart failure and death. Undoubtedly the aortic valvular deformity with the insufficiency and stenosis and the coronary sclerosis as well as the auricular fibrillation played important roles in handicapping the heart.

This case has been presented because of the current interest in the means of clinical demonstration of this rare condition and its surgical cure through unilateral nephrectomy. There can't be much doubt any longer that there is a human counterpart for the experimental hypertension produced in animals by clamping the main

(Continued on Page 495)

PEDIATRIC-PATHOLOGICAL CONFERENCE

DULUTH PEDIATRIC SOCIETY
O. W. Rowe, President

ST. LUKE'S HOSPITAL
Arthur H. Wells, Pathologist

Bilateral Adrenal Hemorrhages with Waterhouse-Friederichsen Syndrome

C. H. Schroder, M.D. and Arthur H. Wells, M.D.

Dr. C. H. Schroder: This four-year-old boy, Andrew P., was admitted to St. Luke's Hospital because of fever, cyanosis and delirium.

He had been in the hospital twice previously, once for follicular tonsillitis and otitis media and a second time for roseola infantum. He also had had measles and chicken pox. He had been immunized to small pox, pertussis and diphtheria. His mother and older brother were living and well. His father, a farmer, was also in the hospital at this time with undulant fever.

The patient had an influenza-like infection for about ten days before admission, during which time he had considerable fever but did not seem seriously ill. His mother had given him aspirin rather freely during this period. On the evening before the day of his death his condition suddenly became much worse. At 11:00 P. M. that night he awoke with a severe pain in the abdomen and there was a sharp rise in his fever. He was given more aspirin and he worried through the night with difficulty. In the morning he vomited and had several loose stools. After consulting me by telephone, for the first time, the mother brought him immediately to the hospital. On the way he became irrational.

He was examined immediately upon admission, about 10:00 A. M. He was a very sick appearing boy, aged four and one-half years. His fingers were slightly cyanotic and the extremities were cold, although his temperature was 105°. He was delirious in a muttering sort of way. There was no retraction of the head but the neck was a little rigid. The pupils were equal and reacted to light. The fauces were hyperemic. There were a few infected crypts in the right tonsil. There was a slight lag in the left thorax and on the right side the breath sounds were slightly exaggerated. Over the left upper lobe the expiration was prolonged and the sounds were somewhat tubular but true bronchial breathing was not heard. The relaxed, sunken abdomen gave no evidence of tumor masses or other abnormality. A doubtfully positive Kernig reflex was noticed but there was no exaggeration of the patellar reflexes. X-ray studies of the lungs revealed some slight evidence of bronchopneumonia. The white blood count was 12,400, the red count 4,260,000, the hemoglobin 11.5 grams, the differential count, neutrophiles 33 per cent and lymphocytes 64 per cent. The spinal fluid contained no white blood cells.

Because of the cyanosis it was necessary to keep him in an oxygen tent. He was given 250 c.c. of salt solution, with 5 per cent glucose, subcutaneously. External heat was applied and sulfathiazole therapy was started. The clinical diagnosis of pneumonia or meningitis was entertained. However, the unusual prostration was a confusing symptom. By mid-afternoon he broke out with a distinct purpuric rash which spread quickly over the face, chest, back, abdomen and extremities. The spots were dark red to purplish in color and varied from a pin-point size to blotches 10 to 15 cm. in diameter. There was some muscular twitching and moderate rigidity from the time of admission. He continued to be restless and irrational and when seen again at 6:00 P. M. a lumbar puncture was performed. While this was being done he had a very profuse, foul, yellowish, watery stool, which showed no microscopic blood. As stated above, the spinal fluid was normal. A blood culture taken at this time remained sterile for 3 weeks in both aërobic and anaërobic media. No pathogenic gram-negative bacilli were isolated from stool cultures.

The child rested somewhat more quietly after the puncture. However, there continued to be some muscular twitching and moderate rigidity. About 8:00 P.M. he vomited 75 c.c. of brownish fluid. His pulse, immediately thereafter, became very weak and irregular. External heat was renewed and a second hypodermoclysis was started while we prepared for a transfusion. Before this could be accomplished, however, the child expired. This was about 9:45 P.M.

Autopsy Findings

Dr. A. H. Wells: With the exception of mild toxic changes in the myocardium, liver, spleen and kidneys, the only postmortem findings of importance were in the adrenal glands. Each adrenal was approximately thrice its average size. There were small hemorrhages throughout the cortical tissue. There was no bleeding into the surrounding tissues and no important pocketing of blood in any part of the glands. There was no injection or purulent matter in the meninges. Postmortem blood cultures were sterile and agglutination tests for undulant fever were negative.

Microscopic study: Approximately 90 per cent of the cortical cells of each adrenal gland were completely destroyed or extensively degenerated. The few scattered remaining cortical cells, generally near the periphery,

showed considerable degenerative change. There was rather extensive hemorrhage throughout the cortical area and much blood pigment in this region. Blood vessels throughout the cortex were severely congested so that in places it was difficult to determine how many of the red cells present were confined within the greatly dilated capillary walls. Only rarely could neutrophilic infiltration be demonstrated. Special stains failed to reveal bacteria. The medullary portion of the adrenals was almost completely spared except for mild evidence of toxic change in the form of vacuolization and irregular staining. There was no hemorrhage of significance in the medullary area. The disease process was remarkably selective of cortical tissue. No significant change, such as thrombosis, could be found in the larger vessels in any part of the adrenal glands.

Dr. C. H. Schroder: In retrospect it may be seen that this boy followed a typical course of the Waterhouse-Friederichsen syndrome, with severe pain in the abdomen, high fever, vomiting, diarrhea, severe prostration, delirium, cyanosis, a rapidly developing purpuric rash, muscular twitchings and rigidity, leading to death within twenty-four hours of the onset of the serious symptomatology. The differential diagnosis included pneumonia, meningitis, and the clinical concept known as Henoch's purpura variety fulminans. It is my opinion that this syndrome is identical with the Waterhouse-Friederichsen syndrome. In this connection I would like to call attention to a very similar case report by Mary Percy Jackson in the *British Medical Journal,* January, 1943.

A variety of well recognized inflammatory processes have been found to be the apparent cause of adrenal hemorrhage, including those due to the meningococcus, hemolytic streptococcus, M. Friedlander, colon bacillus and very likely the virus of influenza. In our patient this virus was very likely the basic cause, as it seemed to be in Jackson's case, mentioned above. We were unable to establish any relation to undulant fever.

It should be noted that there are only a few over 100 cases of adrenal hemorrhage reported in the literature and 90 per cent of these occurred under the age of nine years and 70 per cent under the age of two years. The disease is almost 100 per cent fatal. Had we recognized the true pathology in our patient, we could have added cortin, desoxycorticosterone and ephedrine to the therapeutic measures used.

Dr. C. O. Kohlbry: One must add to the group of causes of adrenal hemorrhage already mentioned those factors associated wtih adrenal hemorrhage in the newborn. These have been divided by Goldzieher and Gordon (*Endocrinology,* March, 1932) into three groups. In the first group are those related to labor in which birth trauma, asphyxia and trauma due to artificial respiration are the principal factors. The normal physiological involution of the adrenals which occurs in all infants beginning shortly before or after birth is in the second group. Here there is a spontaneous degeneration of the inner portion of the cortical cells in an extremely vascular area making this organ a likely site for hemorrhage during this period of life. The last etiologic factor is hemorrhagic disease of the newborn. I do not know that this condition has ever been proved.

The symptoms and signs of adrenal hemorrhage in the newborn are practically identical to those found in the older child or adult with acute adrenal destruction They may be divided into two groups, those depending upon the acute suprarenal insufficiency and those resulting from loss of blood from the circulatory system. In the first instance, one expects rapid respiration, fever, cyanosis, apathy, dyspnea, purpuric rash, muscular twitchings, convulsions stupor, coma and death generally within twenty-four to forty-eight hours. Symptoms frequently attributed to the loss of blood are shock, collapse, cold extremities, increasing pallor, air hunger, abdominal pain, boggy distention of abdomen and at times a palpable tumor in one or both kidney regions.

In 1933, I found six cases of adrenal hemorrhage in the newborn in the records of the Duluth hospitals and in all six fatal cases proved at autopsy the clinical manifestations were essentially those that I have mentioned, with minor exceptions.

Dr. A. H. Wells: I would like to add one additional possible cause of this patient's adrenal hemorrhages and that is a hemorrhagic diathesis resulting from aspirin therapy. Your attention is called to the recent work being done at the University of Wisconsin by C. F. Huebner, O. O. Meyer and co-workers on the production of hypoprothrombinemia resulting from salicylates.

The laboratory findings incident to adrenal hemorrhage may be the result of either acute cortical failure or internal hemorrhage. The first consists of a low grade leukocytosis, hypoglycemia, and at times nitrogen retention due to an associated kidney failure. In experimental work the life of adrenalectomized animals may be greatly prolonged by glucose therapy. Hypoglycemia may be the immediate cause of death in many of the human cases of adrenal hemorrhage. The internal hemorrhage may be sufficient to be an important factor in death and therefore laboratory studies would undoubtedly reveal an increased proportion of serum to red blood cells in these patients.

The central part played by infection has been demonstrated again and again. In the Victorian age, for example, tuberculosis of the lung was relatively common among the well-to-do. This is not surprising when one remembers that the method of medical care was to shut up the unfortunate sufferer in a room with closed windows and a roaring fire and then bring in friends and relatives to watch a beautiful deathbed scene. Those who still remember "Uncle Tom's Cabin" and "Little Women" are not likely to forget good clinical demonstrations given unconsciously in these books. The introduction of fresh-air treatment for this disease had sometimes been regarded as the essential cause of improvement but it is clear that the reduction of the risks of infection played a larger part.—James Mackintosh, M.D., New Jersey *Public Health News,* December, 1943.

PIONEER PHYSICIANS OF FARIBAULT COUNTY

ROSCOE C. HUNT, M.D.
Fairmont, Minnesota

RECORDS of physicians in Faribault County before and during the Civil War are very meager. These were the first years of the settlement of this section and doctors, like others, were unstable; they came and went. Therefore, the only records of value up to 1866 are the professional cards and notices. Files of papers are scarce and incomplete but some have been found and these records are conclusive as far as they go.

Information concerning the years following the Civil War is obtainable from those still living. In some cases information is profuse, and that of special value and interest has been selected. Many incidents and characteristics connected with some of the doctors are told. Some are dramatic, some tragic, some amusing, and there are also some indicating the frailities, such as drug addiction and liquor use, from which physicians are not immune. However, the great majority of stories that have been handed down to us show that these men were leaders in the community, had qualities of faithfulness, marked skill and resourcefulness and were men of unquestioned honor in all respects. Some had very meager education and yet by their unfailing loyalty to the community did a great deal of good and were loved and respected. All had constitutions of iron; they had to or they couldn't have survived.

Nehemiah A. Hunt

Nehemiah A. Hunt was born September 27, 1811, in Mason, New Hampshire, son of David Hunt of the Concord Line of Hunts. Influenced by missionaries, when twenty-three years of age he went out to Ohio and entered Oberlin in 1834, one of the first students. He then attended a branch school at Abbeyville. Later he met Clarissa Conrad, a nurse, and they decided to go to India, he was a medical missionary. He then completed a medical course at "Jacksonville Medical College" and then a short theological course. They were married in 1844. Plans for the missionary work were interrupted, and never consummated. He practiced in several towns in Ohio and in the '50's located in Bond County, southern Illinois, where he practiced until moving to Minnesota.

As the Civil War started, southern Illinois was favorable to the South, and the strong abolition opinions of Doctor Hunt were very unpopular. He, in fact, was threatened, and his family were in a constant state of fear for his safety, so in the late summer of 1861 they started by ox team and covered wagons for Minnesota where his wife's brother, Jacob Conrad, had gone the year before. The trip took about a year because of delay by sickness, floods, et cetera, and they arrived in the fall of 1862. The next spring he took a claim in southern Blue Earth County where he made his home until the late '80's. He practiced actively during the '60's, usually going out on a circuit at regular intervals. He was gone for two to three weeks at a time and went where he was directed from one settler's house to another. While he was gone his wife helped when she

could, conducted many deliveries and cared for the sick often in her own home. There was no money in the war days and afterward, and extreme poverty was the condition throughout the prairie country. Doctor Hunt always rode horseback. After about twelve years' practice he found the trips too hard and some other younger doctors had come into the surrounding towns so he quit practice and took up missionary work and the establishment of Sunday schools and churches. His work ended in Minnesota in the early '90's when he completed a pastorate in a church that he had established in Mapleton. He spent the rest of his life in California where several of his children lived. He died there in 1897 at the age of eighty-six.

There were eight children. Three sons were ministers, two physicians, one daughter married a minister and one a physician. There were two grandsons and two great-grandsons who became physicians.

Thomas Sylvester Fellows

Thomas Sylvester Fellows was born in New Hampshire September 4, 1827. His early life was spent in New England where he had his early education. He graduated from the Medical School of Harvard University in the class of 1852. He knew well Dr. Oliver Wendell Holmes, who was Dean of the school during the time Fellows was there.

In 1862 he came out West and settled in Walnut Grove township, Faribault County. While there he experienced the trials of several Indian uprisings and the hardships of the early physicians. In 1870 he moved to Wells, where he practiced until 1893. In that year he found that his health would no longer stand the rigors and hardships of the Minnesota winters and he moved to Floral City, Florida, where he practiced and remained until his death.

He was united in marriage to Miss Flora E. Waterbury, August 8, 1850. She died in Wells, January 7, 1891.

Compared with many early physicians Doctor Fellows had a fine education and was noted as a fine practitioner. He is said to have been of a very kind disposition, and the communities where he spent his life thought much of him.

Doctor Fellows died at his home in Floral City, Florida, July 1, 1902, after a week's illness. His body was returned to Wells for interment. The funeral was held at the Church of the Nativity, Rev. Mapson officiating. The services at the Rose Hill Cemetery were in charge of the Masonic Lodge, of which he had been a member for many years.[6,9,41]

George D. Winch

George D. Winch was born in the State of Maine in 1835. Some years later his family moved to Wisconsin and settled near Columbus. He graduated from Rush Medical School in 1860. He was a surgeon throughout the Civil War in the 42nd Wisconsin Regiment which was a part of Grant's Army, and was in the Vicksburg siege. In 1865, upon his discharge, he came to Blue Earth City where he practiced twelve years. There is a notice of his being there in a copy of the *Blue Earth City Advocate* of 1866.

It seems that every settlement of the early day had one physician, who for one or more characteristics was notorious. The one qualified for this distinction in Faribault could be no other than Dr. George Winch. His activities and eccentricities have become legendary in the community. He is described, and there are still those who recall him well, as a dashing impulsive character, as a hard worker who did things in a spectacular manner and died the way he lived.

A good many incidents are told about him. He had reportedly been one of

the chief surgeons to Gen. Grant's Army and had done about all the surgery that was performed in those days, so he probably did the many amputations attributed to him. A number of men started to study under him, and there is one notice of "Drs. Winch and Peck" in an issue of *Minnesota Southwest* in 1867.

Benjamin Way was returning from his army service and while walking near Redwood Falls was caught in a blizzard and froze both feet and hands. Doctor Winch was sent for and left immediately, traveling by horses and sleigh. It took him two days to reach the man and he then brought him back to Blue Earth City. After a few days he amputated all four members, and Way lived a good many years afterward.

He was a well known character about the southern part of the state. For winter use the doctor built a covered box on top of runners. He had a cot in it and a stove. The driver went along and the doctor slept. When a storm overtook, the team was unhitched, tied to the box and they waited until they could go on.

When Doctor Winch came to Blue Earth City he had little money. He succeeded in borrowing $1,200 from one of the only well-to-do farmers in the county, J. D. Stanton. He had a claim on the river south of Blue Earth City. In the succeeding years the doctor always stopped at the Stanton farm when in the neighborhood and ate and visited. He also did some few things professionally for Mrs. Stanton, though she had never been seriously sick. After six or seven years had gone by and the doctor had offered no remuneration for the shelter and food he had received, Mr. Stanton one day asked him if he could not make some payment. Doctor Winch said, "I also have thought we should have a settlement." Reaching into his pocket, he pulled out a worn slip of paper on which was written, "To services Mrs. Stanton—$2,700." Mr. Stanton paid the difference.

It is stated by those who still remember, that Doctor Winch was an opium addict and had acquired the habit while in the army. It is also of record that a number of his patients became addicts. If there was any excuse for him it might be made because of the hard army life and the long drives, loss of sleep and hard work that he experienced in his practice. Also it may be said that where patients could not be seen often, it was undoubtedly necessary to leave with them medicine for long periods and for pain opium probably was required.

Upon the organization of the State Board of Health, Doctor Winch was appointed as a member, June 11, 1872.

In addition to the sleigh, Doctor Winch built a bath tub in his house which was a special comfort to him in the heat of the summers. It was said to have been the first, and the only one for many years, in the community. On the late evening of July 7, 1877, at the age of forty-two, he returned from a long hot drive and a hard day's work. As was his custom, he got into a tub of cold water to cool off and there he died about midnight. Some say he had too much liquor, some that he died of morphine poisoning, but Dr. A. J. Franklin who arrived at the time he died stated that it was from an overdose of chloral hydrate. Mass was said by Father Venn in the Blue Earth City Catholic church. A tin casket was made by the local tinner. The body was packed in ice and sent to his old home at Columbus, Wisconsin. There services were held in the Presbyterian church, of which the family were members.

There is real doubt as to whether Doctor Winch merited all the laudation he received. There were undoubtedly other early day physicians of as good, if not better, training, and probably as good practitioners. Certainly, his army back-

ground accentuated his dramatic notoriety; and he was a real showman twenty-four hours of the day. Some people cultivate eccentricities and he was one of these. His death brought forth a poem from the pen of the so-called "Poet Laureate of the West," Charles Freer. It may not go down in history with Longfellow's poems, yet to the simple people of the West it was a masterpiece, and it occupied the front page of the *Blue Earth City Post.*[2,7,8,9,10,14,15,16,19,29,36,37]

John P. Humes

John P. Humes was born January 16, 1837, in Crawford County, Pennsylvania, son of John C. and Mary E. (Griffin) Humes. His parents were natives of Pennsylvania and of Scottish descent. His boyhood days were spent on the home farm and he attended several academies. He taught school several years. In 1856, he came to Illinois where he again taught school a year. The next year, 1857, he moved to Faribault County, Minnesota, and filed on a quarter section of land east of Winnebago City. For four years he lived in a shanty and worked up the land.

In May, 1861, he returned to Pennsylvania and worked with his brother in a barrel factory for three years, during which time he spent his spare time studying medicine from books loaned him by a physician. In 1864, he returned to Winnebago City and took up medical study in the office of Dr. Alvin Lockwood. In 1866 he started practice for himself. In 1867 after a few months' attendance, he is said to have "completed a course at Rush Medical College."

As a physician he was successful and had a very large territory to cover. At one time he drove a span of Indian ponies on a buckboard, although he rode horseback most of the time in the early years. Like others, he underwent great hardships but he was of a very robust constitution, or he never could have stood them. In addition to maintaining a practice for nearly fifty years, he owned and operated three fine farms. He was a very good businessman and had accumulated these farms and other lands as time went on.

In civic affairs he took an active part. He was mayor of the village and a member of the school board for fifteen years. He was a trustee of Parker College and a financial supporter of it. He was a Republican, an Odd Fellow, a Mason and a member of the Methodist Church.

In 1867 he married Emma McColley and there were five children. He died at his home in Winnebago, March 9, 1908, at the age of seventy-one.

Doctor Humes was a man with a rough exterior but a warm heart, and answered calls from rich and poor, traveling the prairies in all sorts of weather. It is said that during grasshopper times, when the clouds of insects obscured the sun for days and ate up all the crops, he burned his books and did not try to collect any fees.

The *Winnebago Press,* in its edition of April 9, 1875, published the following notice over the signatures of Doctors Slagle and Humes:

"Not withstanding the thinness of our pocket-books and clothing, there has not been a case of acute sickness within five miles of Winnebago within six weeks."[3,4,19,32]

(To be continued in the July issue.)

President's Letter

Excluding Tuberculosis from the Hospitals

The Meeker County project for control of human tuberculosis, sponsored by the Committee on Tuberculosis of the Minnesota State Medical Association, is now on the road to completion.

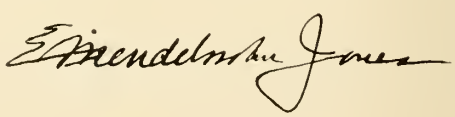
It has stimulated other counties in the state to plan similar surveys of their own, and there is good hope that it may become a model for routine county-by-county discovery and control of tuberculosis throughout the country. It is to the credit of committee members that they are not resting on their Meeker Couny laurels but are continuing to attack the tuberculosis problem from many angles.

They now have at heart a new search for unsuspected tuberculosis at a point where rich rewards are to be had, not only in tuberculosis case-finding, but in added protection against avoidable risks for an extremely vulnerable section of the population—the patients in general medical and surgical hospitals.

With the exception of a few large institutions, such as the University Hospitals, tuberculosis exclusion tests are not performed as part of routine admittance to these hospitals. Patients with known tuberculosis are not admitted, as a general rule, but it is well known that a considerable percentage of patients admitted for surgery, obstetrics and other non-tuberculous conditions do have unsuspected lesions and their tuberculosis may, and not infrequently does, produce serious unforeseen complications, especially in the case of surgery and obstetrics. Also, patients with unsuspected tuberculosis may constitute a menace to hospital personnel and to their own family contacts.

It is a fact that hospitals provide a concentration of people who are peculiarly amenable to any diagnostic or protective measure which staff authorities and their own physicians may consider advisable. It is probable that very little resistance to the added expense would be encountered from the patients and the procedure, whether it consisted of routine chest x-ray or the tuberculin skin test with x-ray for reactors, or, in favorable instances, fluoroscopy, would soon be accepted, just as blood tests are accepted, as a regular part of hospital routine.

It is true that lack of facilities and personnel may postpone establishment of routine tuberculosis exclusion measures for some time, though the development of miniature film may bring it closer, depending upon release of equipment. But the committee is taking a sound step in the right direction in paving the way, now, for establishment of such routines, as soon as equipment, technicians and staff assistance are available when the war is over.



President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

PENICILLIN AVAILABLE

THE availability last month of penicillin for civilian practice constitutes a milestone in medical practice. Heretofore, all penicillin production has been allocated for use of the armed services and for centers for clinical research. This procedure was wise. The clinical application of penicillin has been rather thoroughly investigated at a number of medical centers, and the diseases for which it is of value have been determined. This is a much more economical method than for every physician to do his own research.

As the supply of this new drug is still limited, its distribution, for the time being, will be under the control of the Office of Civilian Penicillin Distribution of the War Production Board, 226 West Jackson Boulevard, Chicago. The drug in vials containing 100,000 Oxford units has been sent to about 1,050 hospitals which will act as depots for distribution. Other hospitals will obtain their supply from these depots until the supply warrants the adoption of the usual methods of distribution by the manufacturers. In case it is not obtainable from these depots, application may be made to the central Chicago office.

Each hospital will receive its monthly quota, according to its needs and the available supply. As the supply is limited, physicians and hospitals will have to coöperate in its use. Physicians will have to remember that penicillin is not a cure-all. Its field has been rather definitely determined, and the report prepared by Dr. Chester S. Keefer, chairman of the Committee on Chemotherapy of the National Research Council, is most instructive. Copies of the report, which contains instructions also as to dosage, may be obtained from the Chicago headquarters office.*

It is effective in all infections due to staphylococcus, hemolytic streptococcus, anaerobic streptococcus, pneumococcus, gonococcus and clostridia (gas gangrene). It is useless in all gram-negative bacillary infections (typhoid, dysentery, influenza, undulant fever, tularemia), in tuberculosis, rheumatic fever, infectious mononucleosis, leukemia, ulcerative colitis, malaria, and poliomyelitis. Its value has not been definitely defined in syphilis, bacterial endocarditis, ruptured appendix, and urinary infection.

It should be remembered that while nontoxic, penicillin is rapidly eliminated from the body. It, therefore, must be administered frequently by the intramuscular method or continuously by the intravenous route. While it is of value on local application, oral administration is useless.

*Copies may also be obtained by addressing the Professional Service Department, E. R. Squibb & Sons, 745 Fifth Avenue, New York 22, N. Y.

PREMARITAL AND PRENATAL EXAMINATIONS

THE American Social Hygiene Association has just published a revised edition of a Summary of State Legislation Requiring Premarital and Prenatal Examinations for Venereal Disease. That thirty of our forty-eight states now have laws requiring a physician's certificate of freedom from venereal disease before a marriage license is obtainable and require a blood test for syphilis be taken promptly by the attending physician or midwife on the diagnosis of pregnancy is striking. That Minnesota along with Washington, Montana, and Maryland (that Gretna Green of the East) are the only states above the Mason-Dixon line which have not passed this legislation is noteworthy.

Minnesota can be rather proud of her record in being in the front ranks in the fight against tuberculosis. Her maternal mortality rate has been in the low brackets for several years. Her laws regulating medical practice have placed our state in the front rank. Her smallpox mortality figures in recent years have been embarrassing it is true. Have we not been backward in not passing laws directed towards venereal control?

Thirty out of forty-eight states believe that parties in a marriage contract are entitled to the knowledge that their prospective partner is free from venereal disease; that the babies of the next generation are entitled to start life free from

syphilis. Can these states be wrong? If not, then we in Minnesota have been remiss.

This is a medical subject. Who is in a better position to observe the results of marriage and confinement without the detection of venereal disease than the physicians? It is clearly in the sphere of medicine to sponsor such laws if not medicine's obvious duty.

The premarital examination laws vary in the different states. In all thirty of the states, the laws provide for premarital examinations of both parties for syphilis. In twelve states, the examination covers other venereal diseases, too, and in two of these states, the examination covers various other diseases.

The subject of the provisions of a state law in case syphilis, gonorrhea, or such diseases as tuberculosis are detected in such examinations is open to some difference of opinon. At least ignorance of the existence of one of these diseases would be obviated, and the contracting parties could be informed of the treatment needed. There is a widespread realization of the desirability of a physician's certificate of health on the part of many young people contemplating marriage even in Minnesota, where we do not have the legal requirement. It is time Minnesota stepped into line with the other thirty states which have already passed this legislation.

QUININE SYNTHESIZED

THE discovery of a method of synthesizing quinine by Woodward and Doering constitutes a milestone in chemotherapy.

Quinine is still the most valuable of the drugs used in the treatment of malaria, although quinacrine (U.S.P.), known under the trade name of atabrine is of value.

The use of Peruvian bark in the treatment of malaria dates back to the seventeenth century. For many years, the supply came from South America. The attempts by England and Holland in 1850 to start chinchona plantations in India and Java proved unsuccessful because of the low quinine content of these particular trees. In 1865, however, Leger sold the Dutch Government's cinchona plantation in Java one pound of seeds of a variety of trees which produced a high quinine content. In 1941, the Java trees produced 1,000 tons of quinine, almost the entire world supply. This supply is now, of course, in the hands of the Japanese.

The active alkaloid quinine was first isolated from the bark in 1820 by two French chemists, Pelletier and Carentou. Since that time, efforts to synthetize quinine have been unsuccessful until now.

As far back as 1853, quinotoxin was produced from quinine by Pasteur, and in 1918, Rabe resynthesized quinine from quinotoxin. In 1931, Rabe was able to synthesize dihydroquinine, which, except for two H atoms, is the same as quinine. His work is said to have offered a valuable clue which the two youngsters, Woodward and Doering, followed.

Robert Burns Woodward was born in Quincy, Massachusetts, in 1917. He graduated from the Quincy high school at the age of sixteen, and his head already contained as much knowledge of organic chemistry as most college graduates. He entered the Massachusetts Institute of Technology at the age of sixteen, received his B.S. degree in three years and a Ph.D. in chemistry at the age of twenty, after only four years of college.

William von Eggers Doering, his coworker, was born in Fort Worth, Texas, also in 1917. He prepared for college at the Belmont Hill school at Belmont, a suburb of Boston, entering Harvard in 1934, and receiving a B.A. in 1938. After taking postgraduate work in chemistry at Harvard, he obtained a Ph.D. in chemistry in 1943. The same year, he was employed by Polaroid on a project to synthesize quinine.

The two young scientists met at Harvard in 1942, and shared the honor of having successfully developed a method for synthesizing quinine.

SOLLMANN, THE "DADDY OF PHARMACOLOGY"

OF GENERAL interest is the announcement of the retirement, June 30, of Dr. Torald H. Sollmann, as dean of the School of Medicine and head of the Department of Pharmacology at Western Reserve University, Cleveland, Ohio.

The youngest of nine children, he came to this country from Coburg, Germany, when only thirteen years of age. In four years' time he learned enough about drugs to pass the Ohio State Board examinations in Pharmacology with flying colors, the youngest Ohioan to obtain a druggists's license up to that time. His love of science and industry

led him to take further work in pharmacology abroad. In 1896, he obtained his medical degree. At this time, there was no book on pharmacology in English, and his first text, entitled "Laboratory Experiments in Pharmacology," was a modest forerunner of his "Manual of Pharmacology" which has been the standard text for medical schools in its six editions.

Associated with the faculty of the Western Reserve Medical School for nearly fifty years, Doctor Sollmann became known as the "daddy of pharmacology" and has trained many young men who have become heads of departments at other universities. As a member and subsequently chairman of the Council of Pharmacy and Chemistry of the AMA, which office he will continue to hold, he has rendered valuable service to American medicine.

WASTE PAPER SALVAGE

OUR attention was called recently by the War Production Board to the critical need for waste paper. Hospitals and doctors are urged to take part in the salvage activity by saving all paper which is not greasy or soiled rather than burning it. It is estimated that of the 19 million tons of paper produced in this country yearly, about eight million tons are not suitable for salvage.

The subject of salvage of paper has received considerable publicity recently, and about 680 salvage depots have been established in Minnesota in centers of population of 250 and over with collections at regular intervals. Hospitals and office buildings, as a rule, provide for the salvage of paper for sale to the paper industry. Some allow the Salvation Army to make regular collections. So, as a rule, all the physician has to do is to see that useless waste paper gets into the waste paper basket. It is surprising how much useless paper in the form of old check books, deposit slips, cancelled checks, old receipt books, copies of old letters, can be unearthed from desk drawers and office closets. Most of the periodicals on the doctor's reception room table are suitable material (according to the jokesters), while current magazines should be donated to servicemen's centers.

Every hospital has more or less of a problem in the disposition of old clinical charts. Files are expensive, and floor space has to be considered. Some hospitals are microfilming their charts, and this will be a more general practice in the future when new microfilm machines again become available.

In addition to saving waste paper, it is far better that there be a more universal saving in the use of paper. This applies to physicians, hospitals, medical journals, and last but not least, government agencies.

CLINICAL-PATHOLOGICAL CONFERENCE (DULUTH)

(Continued from Page 485)

renal artery. The question which arises is to what extent should one go to rule out a unilateral kidney disease which might be causing hypertension? Such cases are indeed rare but a few proved cures have been reported. Undoubtedly a thorough study of the functioning ability of each kidney would be essential. A retrograde pyelogram in our present case would have revealed a remarkably small but otherwise normal kidney pelvis on the involved side. Once exposed at the time of surgery I think the gross appearance of the kidney is sufficiently characteristic to be recognizable without exploration of the renal artery. Possibly the opposite kidney should also be visualized at the time of surgery. Besides being a complicated and difficult medical problem there will undoubtedly remain a financial barrier to the proper and necessary studies of many hypertensive patients. Unilateral pyelonephritis, neoplasm or calculus causing hypertension should present less difficult diagnostic and therapeutic problems.

DR. J. R. MANLEYS What is the present status of the recently proposed medical therapy for hypertension?

DR. A. H. WELLS: As you know, Dr. Harry Goldblatt's experiments led to a theory that something was produced in the ischemic kidney which entered the blood stream and caused widespread constriction of arterioles and thus hypertension. This theoretical substance was called renin. Although not chemically identified, "renin" can be isolated from kidney extracts and it will cause hypertension after uniting with something in the blood serum called renin activator. The product of this union has been called vasotonin. Much effort has been expended trying to find something in kidney extracts or other substances which would neutralize either renin, activator or vasotonin. To date Dr. Goldblatt is pessimistic of the chances of finding any such a neutralizing substance. It is also pointed out that if a therapeutic agent of this type is found it will not cure the underlying disease process but like insulin in diabetes mellitus it must be used in measured regular dosages possibly for the remainder of the patient's life.

Anatomical Diagnosis. — (1) Atheromatous plaque stenosis right renal artery; (2) athropy, right kidney; (3) hypertension (Goldblatt kidney); (4) compensatory hypertrophy, left kidney; (5) auricular fibrillation (from history); (6) coronary sclerosis; (7) calcified nodular aortic valvular disease; (8) chronic congestive heart failure.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

MAYOR LA GUARDIA TAKES A HAND

Among significant signs of the times is the proposal made recently by Mayor LaGuardia for complete medical and hospital service insurance in New York City. The mayor proposes to start the plan with a nucleus of city employes but to open it to any employed person earning $5,000 a year or under. A 4 per cent tax on payrolls, of which employers would pay half, is to finance the plan.

It appears from recent reports that the medical societies of Greater New York have approved the plan in principle but that the doctors have asked, among other things, that participation be limited to people with incomes of $2,500 a year or less. The mayor, on the other hand, is insisting at the present time on the $5,000 income limit because he believes that the people of middle income range, between $2,500 and $5,000, really need the plan most. It is his contention, according to the reports, that the plan will relieve the doctors of much service now performed gratis for people of low income and should therefore justify including the middle income group.

Closed Panel Threat

It has, apparently, not been decided as yet whether the plan will operate with an open panel or a closed panel and the mayor is said to be using the threat of a closed panel to bring doctors into line on the income issue. Naturally, the doctors will not favor any plan which does not open participation to all licensed physicians and give the subscriber free choice of physician. If the doctors do not capitulate to the mayor's proposal for a $5,000 income limit, he is prepared to go ahead, it appears, and hire doctors at salaries from $6,000 to $20,000 a year to provide medical service under the plan. The city would then be divided into zones and the employed physicians would be responsible for all calls within their zones.

"No claim is made for perfection for the plan" the mayor is quoted as saying to the doctors. "We want your ideas, criticism and suggestions for its improvement. But we do not want delay."

At the same time, Mayor LaGuardia is officially on record as approving the Wagner-Murray-Dingell Bill which he has termed the "outstanding legislative proposal before the American Congress." In the event that the bill is enacted by Congress, New York will be "only too happy to turn over its experience to federal administrators and call it a day." Everything must have a beginning, says the mayor.

Insurance Companies Differ

The attitude of insurance companies as reported in the May 4 issues of the *National Underwriter* is also interesting.

"Among the group life insurance companies which are the principal writers of group hospitalization and surgical benefits in the insurance company field," says *The Underwriter*, "the mayor's plan is not viewed with any appreciable alarm. Those who have been studying the whole trend of hospital and medical care insurance and the possibility of its being incorporated into the federal social security plan are inclined to look on the New York City proposal as a step in a desirable direction for they feel that if this type of insurance cannot be made to work successfully on a voluntary and private-enteprise basis, it will inevitably be embodied in federal social security, a course that would be undesirable in many ways."

On the other hand, writers of accident and health insurance policies are said to have received LaGuardia's program with skepticism. Their reaction was that the preventive aspects of the plan as outlined would lead to "a high moral exposure," that is, to great ease of abuse, and that the cost would make most wage earners unrecep-

tive. The actuarial soundness of the plan which provides complete preventive, diagnosis and specialists' services is generally questioned by these companies.

Has Blue Cross Blessing

The plan is said to have the blessing of the Associated Hospital Service, New York's Blue Cross plan, which would supply hospital service under the plan. Louis H. Pink, former superintendent of insurance for the State of New York is head of Associated Hospital Service, now, and is known to have a keen interest in insurance for medical service. It was under Pink's regime as insurance commissioner that several medically-sponsored plans got their start in New York and it was he who issued a sharp warning to the medical societies involved that the insurance department would be obliged to favor changing the law which chartered their activities unless there was more vigorous promotion and wider coverage for their plans. When he accepted the position with the hospitalization group, it was presumably with the idea in mind that he, himself, might eventually have the opportunity to participate in extension of its benefits to cover medical service.

Trial Balloon

It is obvious that medical organizations are not in a position to refuse their participation so long as the cardinal principle of free choice is maintained and subscriber participation is voluntary.

It is obvious, also, that failure of this plan will not discourage Mayor LaGuardia or other backers of such trial balloons. On the contrary they will merely become more insistent upon a compulsory federal plan as the only workable alternative.

SOUND PLANS FOR HEALTH

Physicians who attended the institute for public health administrators at the University Center for Continuation Study last month were impressed by the difference in soundness and worth between the plan for nationwide compulsory sickness insurance embodied in the Wagner-Murray-Dingell Bill and the plan for nationwide distribution of health districts as it was explained by Dr. Haven Emerson, visiting lecturer on public health at the University of Minnesota.

The plan for health districts, as explained by Dr. Emerson, calls for extension of public health units, directed by full-time medical officers of health, to every section of the country. These public health units are to cover districts comprising, usually, more than one county, for economy's sake, and they are to function in accordance with established public health procedures for improvement of sanitation, the control of communicable disease and other recognized health activities. Dr. Emerson, who is professor emeritus in public health of Columbia University, is chairman of the committee of the American Public Health Association which is working out the plan. He and his committee have the backing of the House of Delegates of the American Medical Association as well as other interested agencies of the country.

Unlike many other contemparary planners, these men are dealing with demonstrable needs and they are proposing tested procedures to meet those needs. Their concept of the role of the federal government in promoting the health of the people lies well within the accepted American tradition of local control and local community responsibility. It is clear that their work rates the attention and interest of every physician.

Endorsed by the Delegates

The House of Delegates of the American Medical Association went on record in July, 1942, in favor of medically-directed, full-time public health service all over the United States for the improvement of the national health. The delegates at that time directed trustees of the association to do everything in their power to promote such coverage and the committee of which Dr. Emerson is the head, was appointed with the sanction of the trustees to make necessary studies looking to that end.

At the present time, according to Dr. Emerson, only 40 out of the 130 million people in the United States are living in communities where there is full-time, medically-directed health supervision, and most of these are in the large cities. Public health nurses, if there are any, are working without proper medical direction in many counties and communities and their work, therefore, lacks the effectiveness and coördination it would have under proper direction.

The responsibility for supplying public health organization now lacking for many millions in the United States does not belong to the federal government, in the opinion of the committee, nor

even primarily to the state governments involved. It is the tradition of American life and law that the people, themselves, shall provide essential health as well as police protection and schools for their own communities. States properly set standards, provide supervision and aid in training personnel and they may assist in providing funds, but it is not their function to step in and operate the schools or the police or the health departments which belong to the people themselves.

Counties Should Join Forces

This fact is fully recognized by the committee, though it is not necessary that every county or townhip operate its own separate departments of public health. There is no good reason why counties and towns may not join to form health districts just as they join, now, to form school districts and jointly operate consolidated schools.

In fact, the Rockefeller Foundation, in its subsidized experiments in the South, found that the county is too small a unit to support a full-time county health unit and that, in all but large city-county districts, a larger unit is necessary and advisable for effectiveness and successful financing. Furthermore, even if county units were desirable, it would take a matter of 150 years, at the present rate of progress, to cover all of the 3,070 counties of the United States with full-time, organized health units.

$1.00 Per Capita Recommended

Accordingly, the committee, after extensive studies, decided that divisions should be based upon population, rather than governmental units. It was agreed that 50,000 was the smallest population group which could successfully support a health unit. The country as a whole was divided, then, into units of 50,000, and 1,127, instead of 3,070 health districts, have been proposed. For their support, it is recommended that $1.00, instead of the current 25 to 40 cents, be spent per capita on public health. Also, the typical health district unit should have ten public health nurses, one to each 5,000 persons, plus the usual laboratory and epidemiological staff and equipment, trained sanitary engineers and clerical assistance all under the direction of a full-time, trained medical officer of public health. Personnel would of course, be multiplied and varied, as at present, in large city health departments.

In Minnesota, at the present time, there are only four health districts. They are organized along the lines set up by the committee, but lack sufficient trained personnel and, in any case, cover only a fraction of the state. The largest part of the state is without such protection except for the services of part-time health officers often unpaid or underpaid. Part-time service of health officers whose primary interests lie elsewhere is ineffective in the opinion of the committee.

The plan has been submitted to health departments in each of the forty-eight states and has already been approved by forty-four of them. The Minnesota State Board of Health has studied it carefully and is of the opinion that ten health districts are all that are necessary here. It is probable, therefore, that ten units will be the goal, as a starter, at least in Minnesota.

In any case, it would seem to be a matter of simple common sense that any plan for improving the people's health should start with plans for improving the sanitary conditions in which they live, for controlling communicable disease, for improving milk and water supplies and for teaching the principles of health living. Compulsory sickness insurance plans take little account of such things. But they are the acknowledged, well-tested functions of a public health department and they are either nonexistent or spread far too thin in many sections of the country. Starting out with elaborate and costly provisions for taking care of people after they are sick would certainly seem to be a fine example of putting the cart before the horse. When, in so doing, the domain of individual responsibility is invaded and a good working system for caring for the sick is endangered, then failure of both cart and horse to arrive at any satisfactory destination is practically guaranteed.

It has been demonstrated over many years of experience in Minnesota that there is no conflict between a forward-looking, progressive state health administration and the private practice of medicine. Practicing physicians and public health officials work together here as a team for the public welfare and neither group encroaches on the special fields of the other. Certainly physicians in Minnesota will work wholeheartedly for the early extension of public health services in Minnesota.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary

Minneapolis Osteopath Ends Life While on Trial for Manslaughter

Re State of Minnesota vs. James O. Humbert

James O. Humbert, sixty-four years of age, a licensed osteopath with offices at 200 Fifth Street, S. E., Minneapolis, was found dead in a room at a Minneapolis Hotel on May 7, 1944. Humbert, who was on trial in the District Court of Hennepin County on an indictment charging him with the crime of manslaughter in the first degree, was found with an artery slashed in his left wrist. Dr. Russell R. Heim, Coroner of Hennepin County, listed the death as a suicide.

Following a joint investigation made by Detectives Eugene Bernath and Eugene Dougherty of the Minneapolis Police Department, and a representative of the Minnesota State Board of Medical Examiners into the circumstances surrounding the death on March 26, 1944, of a twenty-three-year-old unmarried Dakota County farm girl, Humbert was indicted by the Grand Jury of Hennepin County on April 3, 1944, for causing the death of the girl following a criminal abortion. Prior to her death the girl named Humbert as the person who had performed the operation upon her for $150. Humbert, who was taken into custody the evening of March 25, was found unconscious in his jail cell on the morning of March 26, from a self-administered opiate and was removed to Minneapolis General Hospital in a critical condition. He subsequently recovered and his trial commenced on April 28. In addition to the witnesses who testified concerning the case for which the defendant was on trial, the State also called three witnesses who testified that the defendant had performed a similar operation on a seventeen-year-old Dakota County farm girl for a like fee of $150 on February 14, 1944. The State completed its case on May 5, and the Court recessed until Monday, May 8. On Saturday afternoon, May 6, the defendant registered at a Minneapolis loop hotel, under the name of J. H. Wilson, Omaha, Nebraska. He was found dead in the room the next afternoon.

The trial was before the Hon. Levi M. Hall, Judge of the District Court, and was conducted for the State by Mr. Michael J. Dillon, County Attorney of Hennepin County, and his assistant, Mr. Luther Sletten. Judge Hall, upon being informed of the defendant's death, granted Mr. Dillon's motion to dismiss the case.

Minneapolis Ash Hauler Pleads Guilty to Abortion

Re State of Minnesota vs. Alvin H. Mesalk

On April 18, 1944, Alvin H. Mesalk, forty-five years of age, 224 Fremont Avenue North, Minneapolis, entered a plea of guilty in the District Court of Hennepin County, to an indictment charging him with the crime of abortion. Following a lengthy investigation by the Probation Officer of Hennepin County, Mesalk was sentenced on April 29, 1944, by the Hon. Levi M. Hall, Judge of the District Court, to a term of not to exceed two years in a State penal institution, the sentence being suspended and the defendant placed on probation for an equal length of time.

Mesalk was arrested on March 29, 1944, by Hennepin County Deputy Sheriffs Ed Antletz and Stanley Hurley. following a report to the State Board of Medical Examiners by a Minneapolis Hospital that a patient had been brought in that day suffering from the aftereffects of what apparently was a criminal abortion. The facts disclosed that Mesalk had attempted to perform an abortion with a catheter on a twenty-five-year-old married woman at her home in rural Hennepin County, on March 24, 1944. Mesalk, a rubbish and ash hauler, had met the woman in a Washington Avenue bar. Mesalk stated to the Court that he was born at Edgar, Wisconsin, in 1898, and had numerous convictions for vagrancy, petit larcency, assault and battery and other minor offenses. He also stated to Judge Hall that this was his first and last attempt at doing an abortion. Judge Hall, before imposing sentence, strongly criticised the defendant and told him that unless he abided by the terms of his probation, he would have to serve his two-year sentence.

South Saint Paul Osteopath Pleads Guilty to Criminal Abortion

Re State of Minnesota vs. Paul A. Reilly

On May 20, 1944, Paul A. Reilly, forty-nine, entered a plea of guilty in the District Court at Hastings, Minnesota, to an information charging him with the crime of abortion. Reilly, a licensed osteopath with offices in the Schult Building, South Saint Paul, surrendered in open court his Minnesota Basic Science certificate and his osteopathic license for cancellation. Upon the surrender of those instruments and upon the recommendation of Mr. Vance B. Grannis, County Attorney of Dakota County, and Mr. Brist, attorney for the Minnesota State Board of Medical Examiners, Judge Schultz passed the matter until the next regular term of court at Hastings, the defendant being permitted to remain at liberty on $1,000 bail.

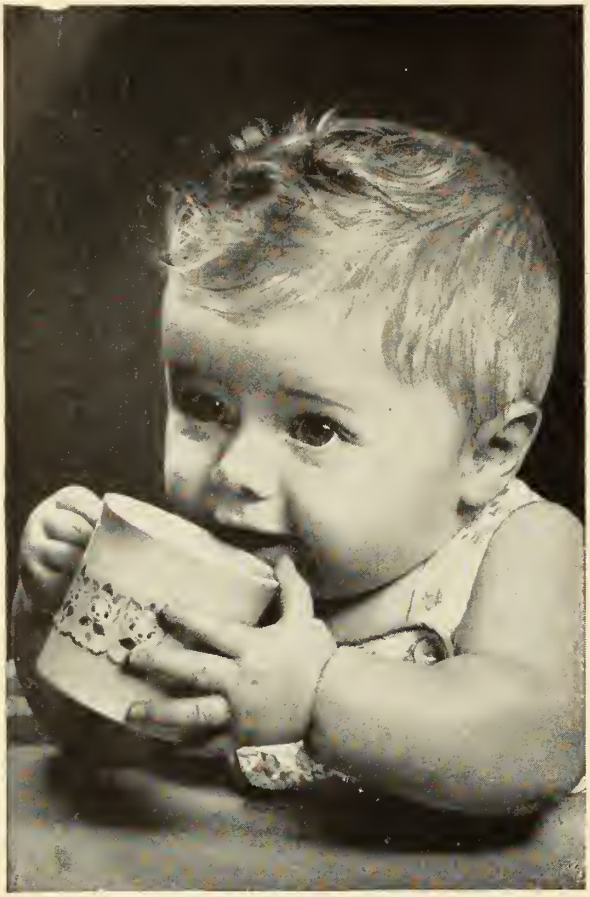
Reilly admitted having performed a criminal abortion on a married woman from Saint Paul on or about March 23, 1944. Prior to the defendant's arrest, he signed a statement admitting that he had performed approximately fifteen similar abortions in the past three years. Reilly was paid $35.00 for his services in the case in which he was prosecuted. The abortion was performed by packing the uterus with gauze. The patient subsequently became ill and was removed to Ancker Hospital in Saint Paul, where she recovered.

License of Saint Paul Physician Revoked

Re The Matter of the Revocation of the License of John Henry Spearing, Jr., M.D.

Dr. John Henry Spearing, Jr., thirty-two years of age, 809 Cleveland Avenue, South, St. Paul, had his license to practice medicine revoked by the Minnesota State Board of Medical Examiners on May 12, 1944. Dr. Spearing was sentenced to a term of 180 days in the Minneapolis Workhouse on March 15, 1944, following his plea of guilty to a charge of careless driving and driving without a driver's license in his possession. Dr. Spearing was licensed in iMnnesota July 10, 1942, on the basis of reciprocity with Wisconsin. Before his license was issued Dr. Spearing was warned by the Minnesota State Board of Medical Examiners that his license was being issued notwithstanding numerous convictions at Milwaukee, Wisconsin, for drunkenness, drunken driving, reckless driving and disorderly conduct, after Dr. Spearing had assured the Medical Board that he full yappreciated his responsibilities as a physician, particularly during the war emergency.

Dr. Spearing was born in Chicago, Illinois, in 1912, and received his Doctor of Medicine Degree from the University of Chicago in 1938.



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In Memoriam

CHARLES E. CAINE

Dr. Charles E. Caine of Morris, Minnesota, passed away April 15, 1944, in his seventy-sixth year. He was the owner of the Morris hospital, had been mayor of Morris since January, 1942, and for six years previous had been a member of the City Commission.

Doctor Caine was born on a farm at Spring Brook, near Princeton, Minnesota, May 25, 1868. After teaching school a few years, he entered the medical college at the University of Minnesota, graduating in 1896. The same year, he began practice at Elbow Lake. His marriage to May Martin at Sauk Rapids took place December 31, 1896.

In 1899, Doctor Caine went to Morris, where he had since practiced continuously. His years of practice date back to the days when county practice was a test of endurance and hardihood.

Doctor Caine had held numerous positions of responsibility during his many years of practice, having served as city and county physician, as county coroner for sixteen years, and as member and president of the Morris Board of Education. He also had been surgeon at Morris for both the Great Northern and Northern Pacific railways.

Doctor Caine served for a number of years on the State Board of Medical Examiners and was president of the board for a time. He was a charter member of the West Central Minnesota Medical Society and was a member of the Minnesota State and American Medical Associations. He was also a Mason, a member of the Bethel Commandery Number 19, Knights Templar, and of the Fraternal Order of Eagles.

Doctor Caine was preceded in death by his son, John, and by his wife in 1930. His daughter, Mrs. Lois McElligott, survives him.

SHORTAGE OF DOCTORS FOR CIVILIAN PRACTICE

The recent action of the Army restricting the specialized training program to medical students now enrolled in approved medical schools and discontinuing the accelerated premedical courses will seriously jeopardize the total supply of qualified physicians for all purposes. At the present time 20 per cent of all medical students, women or men, physically disqualified for military service, constitute the only source of physicians for civilian practice. Under the accelerated training program this amounts to about 1,500 medical graduates each year. As fully 3,500 physicians are removed from civil practice each year by retirement or through illness and death, an accumulating deficit of physicians for civilian practice of approximately 2,000 physicians is developing annually.

A continuing shortage of doctors for civilian practice is threatened and unfortunately a solution of the problem is not in sight.—*Federation Bulletin*, May 1944.



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REPORTS and ANNOUNCEMENTS

AMERICAN CONGRESS OF PHYSICAL THERAPY

The American Congress of Physical Therapy will hold its twenty-third annual scientific and clinical session September 6, 7, 8 and 9, 1944, inclusive, at the Hotel Statler, Cleveland, Ohio. Rehabilitation is in the spotlight today—physical therapy plays an important part in this work. The annual instruction course will be held from 8:00 to 10:30 a.m., and from 1:00 to 2:00 p.m. during the days of September 6, 7 and 8. The scientific and clinical sessions will be given on the remaining portions of these days and evenings. All of these sessions will be open to the members of the regular medical profession and their qualified aids. For information concerning the instruction course and program of the convention proper, address the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago 2, Illinois.

WASHINGTON COUNTY SOCIETY

The regular monthly meeting of the Washington County Medical Society was held Tuesday, April 11. Final reports on full-page advertisements in the *Stillwater Daily* and *Weekly Gazette* and in the *Forest Lake Times* in opposition to the Wagner-Murray-Dingell legislation now before Congress were made and accepted. This activity was sponsored by the Washington County Medical Society, dentists and druggists in the county, nurses' club, and Lakeview Memorial Hospital. Copies of these papers were sent to our representatives in Congress, state representatives, and others. James J. Swendson, M.D., of Saint Paul, addressed the meeting on "Indications for Surgical Operations in Obstetrics" very instructingly.

The regular May meeting became a social one for the doctors and their wives. The guest speaker, William A. O'Brien, M.D., Professor of Postgraduate Medicine at the University of Minnesota, presented, in his usual happy, forceful and distinguished manner, the great advancements made in medicine during the past fifty or sixty years He paid tribute to the completion of fifty years in the practice of medicine by Dr. E. Sidney Boleyn, secretary of the Washington County Society, whose activities in the interest of medicine during that period were commented upon with praise. The Society presented Dr. Boleyn with a gift in honor of his years of medical practice.

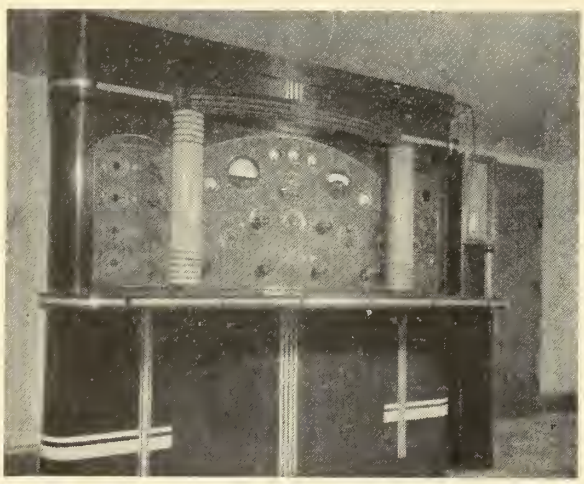
WEST CENTRAL SOCIETY

The West Central Medical Society met in May at the club house of the Morris Golf Club. Golf in the afternoon preceded the chicken dinner served at 7 p.m.

Dr. B. J. Branton of Willmar, speaker of the evening, talked on postwar medical problems. A discussion followed and different opinions went on record for future reference.

Dr. Vincent Ryding of Starbuck was elected a member of the society. Dr. C. E. Caine of Morris, a charter member, passed away on April 15.

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Of General Interest

Dr. Leo McMahon of Breckenridge has reported for duty in the U. S. Navy with the commission of Lieutenant Commander.

* * *

Dr. G. H. Mesker of Olivia is now located at Camp Savage, having entered Army service as a Lieutenant in the Medical Corps.

* * *

Dr. J. A. Malerich, for many years supervisor at the General Hospital in Shakopee, has moved to West Saint Paul, with offices at 950 South Robert Street.

* * *

Dr. J. W. Stuhr of Stillwater was among those who took the continuation course in surgery at the University of Minnesota in May.

* * *

Dr. Charles M. Bagley of Duluth, who is in the U. S. Navy, was recently promoted from Lieutenant (sg) to Lieutenant Commander. His wife and son are living at Norfolk, Virginia, at present.

* * *

Dr. Oliver W. Roberts of Owatonna reported for duty in the Medical Corps of the U. S. Navy in May. He has the commission of surgeon with the rank of Lieutenant Commander.

Dr. Oscar E. Enroth has moved his office from White Bear, Minnesota, to Saint Paul. His new location is at 823 East Seventh Street at the corner of Arcade and Seventh.

* * *

Dr. C. L. Sherman of Luverne was reappointed to the State Board of Medical Examiners in May by Governor Thye. Dr. Sherman has served on the Board for the past seventeen years.

* * *

Dr. Elmer E. Keithahn, who has been associated with Dr. George E. Sherwood in the practice of medicine at Litchfield, Minnesota, since 1939, has moved to Sleepy Eye, where he will establish a medical practice.

* * *

Dr. F. W. Behmler, who has been associated with the late Dr. C. E. Caine at Morris for the past eight years, will act as supervisor in continuing the Morris Hospital established by Dr. Caine in 1925.

* * *

Dr. John H. Remington, Fellow in Surgery, Mayo Foundation, has received the Paine Company Award of $100.00 from the Rochester Academy of Medicine for his paper on "Amino Acid Alimentation," which was presented at the meeting of the Academy on May 2.

(Continued on Page 506)



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Dr. Frederick A. Olson, formerly of Minneapolis, has announced the opening of his office in Suite 309 Wilshire Medical Building, 1930 Wilshire Boulevard, Los Angeles 5, California, for the praticc of surgery and surgical diagnosis.

* * *

Dr. Stanley B. Maxeiner of Minneapolis, addressed the staff of the U. S. Naval Hospital, Great Lakes, Illinois, on "Local Anesthesia," April 29. He also gave the address at the annual meeting of the Duluth Surgical Society on May 25. His subject was "Surgical Aspects of Peptic Ulcer."

* * *

Dr. E. Mendelssohn Jones of Saint Paul, president of the Minnesota State Medical Association, was guest speaker at a joint meeting of the Rotary and Lions Clubs of Stillwater on May 18, when he presented an analysis of the Wagner-Murray-Dingell Bill now before Congress. The meeting was open to the public.

* * *

Dr. Arnold O. Welch, research director of Sharp & Dohme Company, has taken Dr. T. H. Sollmanns' position as head of the department of pharmacology at the School of Medicine at Western Reserve University following the latter's retirement. Dr. Sollmann retains his position as chairman of the Council of Chemistry and Pharmacology of the AMA.

* * *

Dr. Robinson Bosworth, formerly of Saint Paul and executive secretary of the Minnesota Tuberculosis Sanatorium Commission from 1913 to 1925, was awarded the Dearholt medal for leadership in the tuberculosis sanatorium construction program in the nation at the annual meeting of the Mississippi Valley Conference on Tuberculosis, May 14, 1944. Dr. Bosworth was cited especially for his planning and development of the sanatorium system in Minnesota. He is at present superintendent of the Pleasant View Sanatorium in East Saint Louis, Illinois.

* * *

A plaque for the "best hospital public education program in the nation for 1942 and 1943" was presented to the Minnesota Hospital Association at the opening meeting of the three-day convention of the Association, May 14. The award was presented by Frank J. Walter of Denver, president of the American Hospital Association. Rev. L. B. Benson of Saint Paul, president of the Minnesota group, accepted the award in behalf of the Association.

Those elected to office for the coming year are: Thomas E. Broadie, M.D., Ancker Hospital, Saint Paul, president; Miss Dina Bremness, Glenwood Hospital, Glenwood, president-elect; Miss Frances Eckman, Miller Hospital, Duluth, first vice president; Sister Christopher, St. Cloud Hospital, St. Cloud, second vice president; Miss Nellie Gorgas, St. Barnabas Hospital, Minneapolis, treasurer (reëlected); A. F. Branton, M.D., Willmar, Executive Secretary (reëlected). Members of the Board of Directors are: J. H. Mitchell, Colonial Hospital, Rochester; Emil Hansen, St. Luke's Hospital, Fergus Falls; Sister Anna Bergeland, Lutheran Deaconess Hospital, Minneapolis; W. W. Sherman, Itasca County Hospital, Grand Rapids.

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GYNECOLOGY—Two Weeks' Intensive Course, starting October 2. One Week's Personal Course in Vaginal Approach to Pelvic Surgery, starting October 23.

OBSTETRICS—Two Weeks' Intensive Course, starting June 26.

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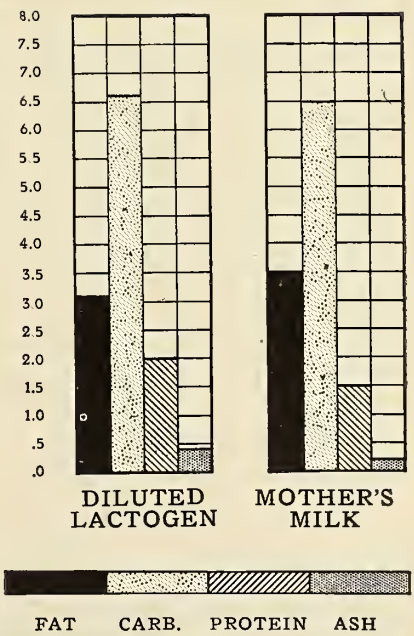
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Clinical Pediatrics, p. 156.



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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

FUNDAMENTALS OF PSYCHIATRY. Second Edition. Edward A. Strecker, M.D., Sc.D., F.A.C.P. Professor of Psychiatry and Chairman of the Department, Undergraduate School of Medicine, University of Pennsylvania; Psychiatrist to the Pennsylvania Hospital; Attending Psychiatrist, Psychopathic Division, Philadelphia General Hospital; Consultant to the Bureau of Medicine and Surgery, United States Navy; Consultant to the Secretary of War, A.A.F. 219 pages. Illus. Price, $3.00, cloth. Philadelphia: J. B. Lippincott Co., 1943.

INDUSTRIAL OPHTHALMOLOGY. Hedwig S. Kuhn, M.D. 294 pp. $6.50. St. Louis: C. V. Mosby Co., 1944.

This work summarizes Dr. Kuhn's efforts in industrial ophthalmology. The author has analyzed the requirements for visual testing in industries pointing out the necessity of placing employes in their proper environment visually. Different requirements for visual tests are described and techniques are outlined. Stress is laid on the necessity for specific refractions for special jobs pointing out that a crane operator should be examined from a different viewpoint than a person doing close work from eight to ten inches.

The author uses the term "visual engineers" meaning that the ophthalmologist must acquaint himself with the employes' surroundings and visual requirements.

Dr. A. C. Snell has written a chapter on "Industrial Eye Injuries" and this is an excellent summary of this phase of ophthalmology.

There is a description of goggles and other requirements for eye protection. Discussion is introduced on the new phases of industrial ophthalmology particularly relating to welding. Mention is also made of the epidemics of keratoconjunctivitis. In the appendix are listed toxic hazards with the basic plans of treatments.

This book is very much worth while for anyone interested in industrial ophthalmology, as most of us are, to a greater or lesser degree. It opens a new field and brings out the many new requirements that are expected of the present-day oculist.

F. N. Knapp, M.D.

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 **July, 1944** **Number 7**

THE NEW INTENSIVE MEASURES FOR THE TREATMENT OF EARLY SYPHILIS

PAUL A. O'LEARY, M.D.

Rochester, Minnesota

IN 1935, Chargin, Leifer and Hyman[2] reported their two-year experience with treatment for early syphilis by the five-day intravenous slow-drip method. The procedure was suggested by Chargin as a result of the observations of Hirshfeld, Hyman and Wanger that many of the reactions from intravenous medication were the result of too rapid injection. They expressed the opinion not only that this "speed shock" could be prevented by slow and prolonged administration by intravenous drip but that larger amounts of toxic substances could be given in this manner. The second report in 1939 by Hyman, Chargin and Leifer[5] on the exceptionally well-controlled five-year observations of the five-day treatment materially increased the wave of enthusiasm for it and has now revolutionized the manner of treating early syphilis.

It was natural that many modifications of the five-day plan and new methods of rapidly treating early syphilis would soon develop. It should be remembered that Ehrlich had hoped originally that salvarsan would cure syphilis when given in a single massive dose, but his recommendation as well as those subsequently developed by Hoffman and later Pollitzer was soon discarded because of the high incidence of therapeutic failures. So at the time the Mount Sinai (New York) Hospital group reported on the five-day plan, the treatment of early syphilis was an arduous and expensive undertaking which lasted for eighteen months and required as a minimum thirty injections of arsphenamine and sixty injections of a heavy metal such as bismuth. As syphilotherapists were eager for a simpler, less expensive and technically less difficult program, the recommendation of Chargin and his associates in spite of its excellent clinical and serologic results offered technical objections and complications that prevented its universal adoption.

There are five methods of rapidly treating acute syphilis that I shall discuss, but before doing so, may I emphasize that the final estimation of the value of these methods cannot be made until at least five years and preferably ten years of observation of the treated patients have elapsed since the treatment was completed. Reports of the failures, both clinical and serologic, as well as the complications noted from the treatment should, however, be recorded before the five- and ten-year observations are completed.

The Five-Day Plan

The five-day plan as suggested by Chargin, Leifer and Hyman consists of continuous intravenous injection by the slow-drip method (Murphy drip) of 240 mg. of mapharsen dissolved in 2,400 c.c. of a 5 per cent solution of dextrose. The rate of flow is approximately 3 c.c. per minute, which requires ten to twelve hours to give the entire amount. When the full amount has been given, the needle is withdrawn and the fol-

From the Section on Dermatology and Syphilology, Mayo Clinic, Rochester, Minnesota.

lowing day the procedure is repeated until a total of 1,200 mg. of mapharsen has been given in five days. Neoarsphenamine was employed at first but was discarded because of the high incidence of complications. The use of mapharsen in place of neoarsphenamine has resulted in a marked decrease of the number and types of complications, although these reactions are still high enough to require that the program be carried out in a hospital with personnel trained in the technique of the procedure. It is not a form of treatment that should be given in the office or home by the physician who treats syphilis occasionally. The complications from the five-day plan among 270 patients treated by Chargin, Leifer and Hyman were as follows: there were no deaths from hemorrhagic encephalitis from mapharsen. One death followed the use of neoarsphenamine. Toxic skin eruptions but not exfoliative reactions occurred in 11 per cent, while fever, mild sensory disturbances, usually transitory, and jaundice occurred in 1 per cent or less of the cases.

The results of treatment indicate that 82 per cent of the patients who have been adequately followed up thus far derived an excellent clinical and serologic result. Further observation of this group of patients for five more years will determine the real value of the method.

The Multiple Syringe Technique

One of the early modifications of the five-day plan of treatment recommended by Thomas and Wexler and by Schoch and Alexander working independently of each other, was the use of the multiple syringe technique. Instead of using the drip principle, mapharsen was given by syringe, one or two injections per day being given for varying periods. For example, 100 mg. of mapharsen may be given twice a day for six days or 100 mg. once a day for twelve days. The advantage of this plan has been that the patient may be treated without hospitalization. The disadvantage of the method has been a febrile reaction associated with edema and dermatitis of the face, nausea and vomiting that is more alarming when first encountered than it is serious. Also, hemorrhagic encephalitis and peripheral neuritis occurred frequently enough to necessitate considerable caution in carrying out the plan. The satisfactory results thus far approximate 75 per cent.

Shaffer's Method

Shaffer has conservatively modified the five-day program by adding bismuth to the course. He gives one injection of mapharsen of 180 mg. by the drip method, which requires slightly more than one hour to give. Five injections are given on five consecutive days, following which three injections of bismuth are given the first week and one injection a week is given for four more doses. The satisfactory results from this program also approximate 82 per cent and the complications are not severe.

Eagle and Hogan's Method and Its Modifications

The plan in vogue at the present time in the United States Army was developed by Eagle and Hogan, who, as a result of experimentation on rabbits, recommended that a sufficient amount of mapharsen could be given in twenty-six weeks to produce equally satisfactory clinical and serologic results with but few complications. My experience with this procedure has brought forth two significant points: (1) that the time interval could be decreased materially to six, eight or ten weeks, and (2) that the addition of bismuth therapy decidedly increased the favorable results without adding to the complication rate. At the present time I am employing a modified Eagle system, which consists of three injections of mapharsen and two injections of bismuth per week for eight weeks followed by eight weeks of intramuscular administration of bismuth at the rate of 1 c.c. two times a week. The mapharsen and bismuth courses are repeated following a month's rest period. This program has thus far produced highly satisfactory clinical and serologic results with almost complete absence of complications.

Kendell, Rose and Simpson's Method

Kendell, Rose and Simpson reported in 1939 their experience in the one-day treatment of early syphilis by the simultaneous use of hyperthermy, mapharsen and bismuth. At the present time in two institutions in this country which have been helped financially by the United States Public Health Service the method is undergoing an extensive trial. The patient suffering from early syphilis is given one session in the hyperthermy machine where his temperature is raised on an average to 105.6° F. and maintained for eight

hours. During the fever session he is given 120 mg. of mapharsen intravenously and 75 mg. of bismuth intramuscularly at the beginning and end of the fever course. This is the only treatment that the patient receives, unless he manifests signs of relapse of the disease. In the latter case one of the other intensive treatment programs is instituted.

This startling therapeutic adventure in syphilotherapy is producing results that are less satisfactory than the other methods of treatment[1] and although experience and a well-trained corps of assistants have eliminated some of the kinks in the regimen the mortality rate is still too high to make the procedure practical and safe. The preliminary report on the results of the treatment after nine months' use of the method indicates a favorable outcome in less than 60 per cent of the cases. However, a more prolonged observation period will determine the actual value of the procedure.

Comment

My experience with these various systems for the treatment of early syphilis has brought forth several points that seem worthy of emphasis. From the economic angle, to reduce the period of treatment for early syphilis from eighteen months to five days has been a great advance, and with the newer developments it would appear that the former economic obstacles to treatment, namely time and cost, have been eliminated. Up to the time the five-day plan was recommended, syphilotherapists have been endeavoring to develop a treatment for acute syphilis that could be given in a short period with few complications, that was inexpensive and that was not technically difficult to administer. Most of the new systems of treatment meet the first two of these requirements in that the treatment can be given in a short time, presents few complications in the well-controlled cases and is less expensive than the old method. However, in these new procedures the technical difficulties have been increased materially rather than simplified. The "five-day drip" and the "one-day" plans require hospitalization and a trained crew; the syringe modifications of the drip method may be given while patients are ambulatory, but if hospital facilities are available it is preferable that they be utilized in order to minimize the complications. The modified Eagle or eight-week plan has the advantage of not requiring hospitalization, and the reactions from it are few and mild.

From the scientific aspect, to speak of "cures" for acute syphilis from treatment given in five days or even one day is indeed a dramatic departure from the former eighteen-month ordeal that patients suffering from syphilis were required to undergo. Up to the present, the incidence of favorable serologic and clinical results from the short intensive systems is as high as, and in some reports higher than, from the old prolonged methods. The actual number of persons reported as "cured" in the future will no doubt be much greater because more persons will complete these short courses of treatment. The continued observation of the patients thus far treated by the newer methods is now the paramount part of the evaluation of these systems of treatment, as time is essential for the observation and appraisal of any method advocated for the treatment of early syphilis.

The high incidence of reinfections that have developed after intensive treatment is of particular scientific interest. A discussion of superinfection versus reinfection is too lengthy and unsettled to enter into at this time, but those of us who have been reluctant to recognize second infections of syphilis are now encountering such cases frequently. It appears that the short intensive course prevents the establishment of an immunizing reaction on the part of the host, so that reinfections occur. Other significant points are the high incidence of "cures," practically 100 per cent, among the patients who start the intensive treatment program while still in the seronegative chancre stage, and the equally significant fact that the earlier treatment is started after the appearance of the chancre the higher is the rate of "cure." Likewise the incidence of invasion of the central nervous system is decreased greatly among patients treated by the intensive systems, as evidenced by an incidence of asymptomatic neurosyphilis of approximately 2 per cent. Under the old program between 15 and 25 per cent of the patients manifested signs of invasion of the nervous system.

In approximately 20 per cent of the patients who acquire syphilis malignant complications of the disease eventually develop. In the remainder of the group, in many cases the disease is controlled spontaneously, while in others a small amount of treatment is required to maintain an

asymptomatic state throughout the lifetime of the patient. At this time it appears that the intensive treatment measures now undergoing trial will control the disease quickly and safely in 80 to 90 per cent of the cases, but a percentage similar to that in which treatment failed under the long protracted course will also need subsequent treatment depending on the type of syphilis that eventually develops. However, if treatment for acute syphilis can be given successfully in a week or thereabouts when it formerly required eighteen months and if such treatment can decrease the incidence of late complications, it is, to say the least, a milestone in syphilotherapy.

Penicillin has recently been recommended by Mahoney and others as a satisfactory agent for the treatment of syphilis. The National Research Council created the Subcommittee on Venereal Diseases which is at the moment supervising the appraisal of penicillin in various clinics in this country. Although the first patients were treated only several months ago, the results thus far are sufficient to warrant a continued intensive appraisal of the drug in all phases of syphilis.

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PRE-OPERATIVE AND POSTOPERATIVE CARE FOR THE BAD-RISK PATIENT

CLARENCE DENNIS, M.D.

University Hospitals, Minneapolis, Minnesota

THE measures employed in the care of the poor-risk patient on the Surgical Service at the University of Minnesota Hospitals have been developed over a period of years under the stimulation and guidance of Doctor Owen H. Wangensteen, Chief of the Department of Surgery, and the procedures which I shall mention are those which he and those of us who are members of his staff have found most effective.

In any discussion of the care of the "poor-risk" patient, it is essential that we specify just what that term is intended to imply. As far as the present discussion is concerned, we shall deal only incidentally with the emergency case, but shall concentrate upon the patient whose health has been sapped by more chronic conditions.

The causes of the debilitated states about which this discussion centers are roughly: (1) dehydration, (2) malnutrition, (3) starvation, whether due to lack of food or to increased metabolism, (4) prolonged plasma loss with or without whole blood loss, (5) prolonged infection, or (6) any combination of the above items. The specific diseases which may contribute to these factors are represented by: (1) cancer of the stomach or colon with ulceration, (2) pyloric obstruction, whether benign or malignant, (3) chronic bowel obstruction, (4) chronic ulcerative colitis, (5) prolonged infections such as osteomyelitis and Meleney ulcer, (6) the later stages of extensive surface burns, (7) hyperthyroidism, and (8) a host of less common ailments. Diabetic, cardiac, and renal complications are possible additional factors.

We are all, unfortunately, too familiar with patients whose pulse and blood pressure become im-

From the Department of Surgery, University of Minnesota Hospitals, Minneapolis, Minnesota.

perceptible late or even very early in the course of surgical operations, and who require heroic amounts of plasma or blood to avoid catastrophe. There is every reason to believe that this picture can be largely avoided by provision of adequate pre-operative preparation.

Pre-operative Care

This group of patients is difficult to handle because of the likelihood of development of a whole series of complications. Lowered plasma protein levels and inadequate vitamin C intake have been amply proven to interfere with wound healing, to lead to evisceration, and to favor the development of edema. The patient whose water and salt balances are out of line is a candidate for edema, particularly if the plasma protein level is low, and, unhappily, the site of election for the development of edema in the postoperative period is in the lungs, a factor which appears to play a large role in the development of postoperative atelectasis and bronchopneumonia. All of these factors apparently may play a part in the development of further complications, such as postoperative anuria, thrombophlebitis, and embolism.

Water Balance.—Many of these poor-risk patients, particularly those with obstruction in the gastro-intestinal tract, may come to us with clinical dehydration, and this will present the first problem to solve in preparation for operation. As Coller and others have emphasized, the patient in clinical dehydration is 5 to 7 per cent underweight due to fluid loss alone, and the correction of this situation may be achieved by the administration of fluids with this value in mind. Severe dehydration is well treated by administration of 5 per cent of the body weight of fluids parenterally, one-half of this being 0.9 per cent NaCl. As a check on the status of hydration from day to day, Coller has shown that daily weighing of the patient is an invaluable aid, especially in patients in whom parenteral feeding is being employed. Gains of 5 per cent above the usual level are associated ordinarily with clinical edema, and gains of more than 2 or 3 per cent imply impending edema and dictate caution in administration of further fluids. A scale for weighing patients is used on all major surgical cases, both before and after operation, at the University Hospitals, and the information it has given has been a tremendous asset.

Salt Balance.—Improper sodium chloride administration to poor-risk patients may prove as readily fatal as the underlying disease itself. In patients such as those under discussion, excessive salt intake, even if given by mouth, tends to favor water retention, such as edema, ascites, pleural effusion, etc., particularly since the plasma protein level is also usually low.

A markedly low level of plasma chloride may lead to marked and even fatal drops in blood pressure which may respond extremely poorly to transfusion. Patients with diarrhea, vomiting, or large ulcerating surfaces are likely to arrive in a hypochloremic state. For those patients who must be supplied other than by mouth, Coller has devised a very simple rule to determine the amount of sodium chloride which must be given to return the blood level to the normal level of 560 milligrams per 100 c.c. of plasma (expressed in terms of sodium chloride): "for each 100 mg. that the plasma chloride level needs to be raised to reach the normal, the patient should be given 0.5 grams of salt per kilogram of body weight." Most satisfactory returns of blood levels to normal are obtained in those who are relatively acutely ill; those who have been ill for longer times tend to accumulate salt and water abnormally, as in edema and ascites.

When return of the blood chloride level to normal has been accomplished, maintenance may be parenteral, when necessary, and is usually easily accomplished by administration of 5 to 6 grams daily, with extra allowance at the rate of 5 grams per liter for losses due to vomiting, diarrhea, drainage, or gross sweating. The chloride in the urine is easily determined by the Van Slyke titration, and the aim is to keep the daily output between 2 and 7 grams, which assures a safe margin from either over- or under-dosage.

Acidosis and Alkalosis.—The patient may come in a state of marked acidosis or alkalosis, but usually it is found that if adequate salt and water are given and an adequate output of urine is obtained, the situation will be overcome without resort to other measures.

Caloric Requirements—Oral Route.—These patients come to us in states of moderate to severe starvation. It has been felt in the past that most of them, let us take for example the patients with duodenal ulcer or gastric cancer, could not be fed

by mouth because such diets as the first stage Sippy were persistently vomited. Several years ago Wangensteen showed that certain of these patients could be well fed if an inlying nasal gastric tube were used to introduce a liquid formula, thus avoiding entrance into the stomach of several ounces of liquid at a time, often with large amounts of simultaneously swallowed air. In the past year or two, Doctor R. L. Varco, working under Doctor Wangensteen at the University Hospitals, has shown that the great majority of such patients can be well prepared in this fashion, especially if the proper type of diet be employed.



Fig. 1. Scale and stretcher used for weighing patients daily in the early postoperative period. (From Wangensteen: Surg. Gyn. & Obst., 72:257, 1941.)

Varco has developed liquid diets high in protein and carbohydrate and very low in fat content, with a caloric value of about 1.5 calories per c.c., one of which is shown in Table 1. After the first day or two, many of these patients can take the diet by mouth and dispense with the nasal tube, but a few need prolonged tube feeding. Usually the liquid formulas can be used as supplements to a solid high-carbohydrate, high-protein, low-fat diet. He usually succeeds in getting 5,000 to 6,000 calories a day into these patients by this means, and in a review of the literature and by studies of his own, he has demonstrated that such measures correct the fatty infiltration of the liver found in the patients under consideration, and lead to elevation of the plasma protein level and deposit of large amounts of carbohydrate and protein in the liver. The rest of us on the staff have been very much impressed with the manner in which such preparation has transformed poor-risk patients to good-risk patients under our eyes. Marked drops in blood pressure during operation, postoperative anuria, ileus, et cetera, have all fallen greatly in frequency since the inception of this regimen. Varco bases the duration of such preparation on the proportion of the body weight the patient has lost since the onset of his illness, using five days if the loss has been 5 to 10 per cent of the body weight, ten to twelve days if it has been 10 to 20 per cent, and three weeks if it has been 25 and 30 per cent.

TABLE 1. UNIVERSITY HOSPITAL GASTRIC DIET II.

Carbohydrates	408.8			
Protein	120.4			
Fat	37.2			
Calories	2446			
		Cho	P	F
Whole Egg—6			36.0	36.0
Egg Whites—2			8.0	
Skimmed Milk Powder—4 oz.		58.8	40.4	1.2
*Lactose—300 gms.		300.0		
Skim Milk—1,000 gms.		50.0	36.0	
5 G Salt		408.8	120.4	37.2

†Pre-operative liquid diet devised by Varco and in use at the University Hospitals. (From Varco.4)

*Beet or cane sugar can be substituted.

An adequate vitamine intake is also provided with the diet.

Caloric Requirements—Parenteral Route.—Those remaining patients who genuinely cannot

be prepared by the oral route present a very serious problem indeed. After a trial of 10 per cent glucose by the staff, the author suggested the use of 20 per cent glucose solutions intravenously three to four years ago, and there is little other choice as yet, but this solution is irritating and leads to thrombosis of the veins very readily. Coller has mentioned that 10 per cent glucose must not be given faster than 6 c.c. per minute because of loss in the urine, and we have found that almost none of our patients lose over 15 per cent of the glucose administered as 20 per cent solution if it is given no faster than 3 c.c. a minute.

It is apparent that it will take approximately six hours to administer intravenously 1,000 c.c. of 20 per cent glucose solution at this rate. The needle must therefore be placed, as Coller suggests, away from the elbow, preferably in the midportion of the forearm, so that easy movement is possible and the patient can sit up in a chair or walk about the bed with the infusion running. By this means it is feasible to get 1,200 to 1,600 calories into these patients daily. This may be supplemented by subcutaneous injections of 5 per cent glucose with or without salt, leading to the supplying of 200 to 300 additional calories. Spillage in the urine may be reduced somewhat by partial coverage with insulin added directly to the intravenous fluid. We customarily add also 200 to 300 mg. of cevitamic acid, 20 mg. of thiamine, and 10 c.c. of a crude liver extract.

These patients, of course, suffer at least as much from protein starvation as from lack of carbohydrate, and human plasma thus far is the only agent by which this may be regularly and safely accomplished. The minimum requirement under the circumstance is 300 to 400 c.c. daily.

Hemoglobin.—Most of these patients are anemic and need transfusion to raise the blood hemoglobin level, but the present consensus of opinion seems to be that the hemoglobin level is far less important in the healing of wounds and the general reaction of the patient, except for reaction to certain types of anesthesia, than is the general nutrition.

Use of Suction.—At operation these patients at the University Hospitals regularly have nasal gastric suction tubes in place, for ileus has not been observed in patients who have not been allowed to swallow and retain large quantities of air during and after operation. Nasal suction is ordinarily retained about forty-eight hours, or until abdominal sounds, as heard with the stethoscope,

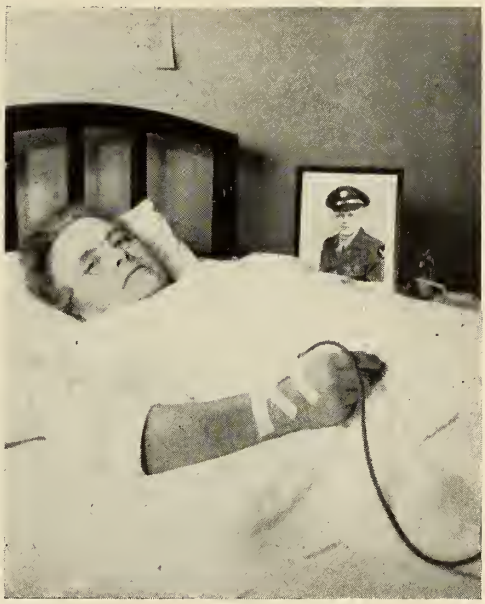


Fig. 2. Manner of giving of fluids intravenously to permit patient freedom of movement during the infusion.

have returned to normal, or the patient has passed gas by rectum.

Prevention of Anuria.—We have felt that postoperative anuria can be best avoided by establishment of adequate nutrition pre-operatively and by induction of a reasonble diuresis in the few hours just prior to operation by the intravenous injection of a liter of 10 per cent glucose solution. During the day of operation, it is customary to give nothing by mouth, but to give a total of about 3,000 c.c. of parenteral fluids containing about 5 grams of sodium chloride. Judicious use of mercurial diuretics may be necessary.

Postoperative Care

General Postoperative Care.—The patient returns to the floor in steep Trendelenberg position, a precaution aimed not only to maintain blood pressure during transport but also to prevent the accumulation of salivary and upper respiratory tract secretions in the lungs. This position is maintained the first twelve hours after operation, preferably with the patient turned half onto his face to promote better drainage. The patient is turned from side to side every two hours, hyper-

ventilated at similar intervals, and encouraged to cough frequently. The Mueller suction apparatus is used freely to keep the mouth and pharynx dry in the first few hours, until reflexes are normal and the danger of aspiration seems lessened. After the first twelve hours, the foot of the bed is kept elevated about 6 inches until the nasal tube has been removed on the third or fourth day. Frequent turning of the patient, hyperventilation, and encouragement to cough are continued also until the tube has been removed. Most important of all, the patient is urged to move arms and legs continuously—1,000 times a day—a measure which, combined with the 6-inch elevation of the foot of the bed, is intended to prevent stasis in the great veins and to lessen the incidence of thrombosis and embolism.

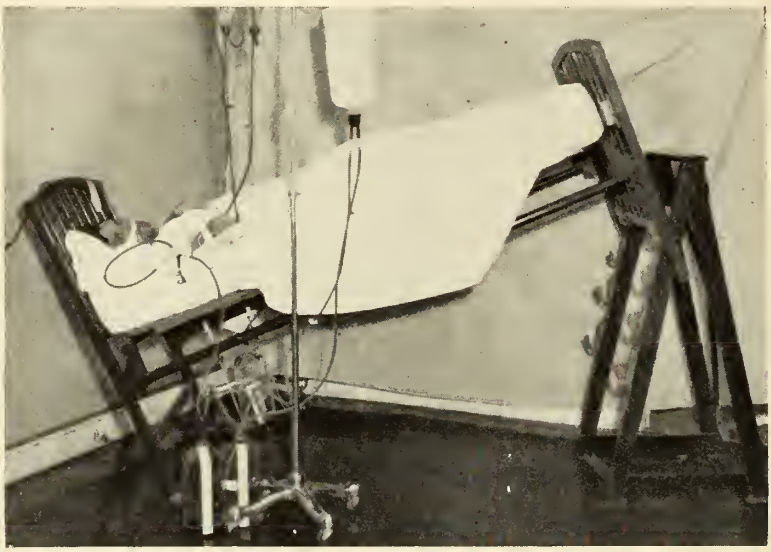


Fig. 3. Steep Trendelenburg position employed in the first twelve to eighteen hours postoperatively, to avoid aspiration of secretions and to favor stabilization of the circulation. (From Wangensteen: Surg. Gyn. & Obst., 72:257, 1941.)

Fluids and Salt in the Postoperative Period.—During the days until normal alimentation has been established, the daily fluids usually given intravenously are 1,500 c.c. of 10 per cent glucose to which vitamins and plasma have been added; This is supplemented with subcutaneous injection of 5 per cent glucose in distilled water, some of which is made up in 0.9 per cent sodium chloride, making a total of about 3,000 c.c. of fluids for the patient daily.

In the ensuing days, careful day-to-day checking of body weights serves as a guide to warn against excessive fluid administration because of inadequate urinary output, in instances in which weight has been gained and edema impends, and to indicate the more free use of fluids if the weight is low. Salt administration is much as already described for the preparation of patients by parenteral means.

The Special Nurse.—In the first two or three postoperative days, there is no measure so productive of good results in the poor-risk patient as the acquisition of nurses who can be in constant attendance. These patients need a host of small attentions in addition to those already mentioned, and, last but not least, a nurse always at hand is an excellent aid to morale.

Inlying Catheter.—Many of these patients fall into the older age group with mild prostatism, and cannot void spontaneously in the immediate postoperative period. In such people, we usually leave inlying Foley catheters for the first three to four days. Administration of a half a gram of sodium sulfadiazene subcutaneously in 100 c.c. of normal saline solution twice daily is a helpful prophylaxis against urinary tract infection.

Feeding.—Following removal of the nasal tube, the patient is kept a day on clear liquids, a day on full liquids, a day on a soft diet, and finally

passes to a general diet. After gastric resection, the diet is also carefully graduated as to quantity the first few days.

Early Ambulation.—We are becoming more and more impressed with the virtues of early ambulation. Good pre-operative preparation and careful silk closure seem to us to justify getting these people out of bed seven days after such operation as gastric or colic resection and sending them home nine days after operation.

Conclusion

Let me stress in conclusion that the time spent in careful pre-operative preparation not only cuts the time till dismissal, but cuts the severity of reaction to operation and the mortality as well. It is only by watching such patients with extreme care throughout and by endeavoring to maintain a good caloric and protein intake throughout, however, that best results can be obtained.

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EARLY DIAGNOSIS OF TUBERCULOSIS

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THE same three problems in tuberculosis control are still with us, early diagnosis, adequate treatment and sufficient rehabilitation. This paper will deal with early diagnosis.

The general practitioner still finds 50 per cent of our sanatorium patients. The more he knows about the matter, the earlier his share of these patients will be discovered. The earlier a case is found, the better the prospects of recovery. The trend in early diagnosis leans now towards adult group surveys as against school surveys. For many years we have been trying to set up an efficient and effective case-finding program. This is a problem of great magnitude, because of the great number of persons potentially infected and the difficulty of making an early diagnosis. It is not possible to make a diagnosis of early tuberculosis by physical examination in most cases. Even far advanced tuberculosis is easily missed by the stethoscope. Besides, only sick people come to be examined, and people with early tuberculosis usually are not sick.

Minnesota is one of the leading states in both diagnosis and treatment of tuberculosis, as it is in medicine generally. Minnesota pioneered in the eradication of tuberculosis in cattle, and is leading the fight on human tuberculosis by similar methods of county accreditation, disposal of infectious cases (in humans by segregation and treatment), and widespread educational efforts.

Health propaganda featuring a utopia for our children has always been very successful; and for many years we have been barraged with propaganda in favor of school surveys. I wish to outline the advantages and disadvantages of the school survey system and bring to your attention a method of case-finding which is supplanting the school survey in many parts of the country, and which we cannot afford to neglect.

The idea of a school survey is as follows: (1) administer tuberculin tests to all the children in school; (2) go into the families and neighbors of the positive reactors to determine the positive sputum case who was the source of the child's infection. On the face of it, this sounded like a good idea. We can test with little expense a large group of children. School children are relatively easy to contact, being congregated in school and amenable to the suggestion of teachers; and nobody complains about needles being stuck into school children. Tuberculin is inexpensive. A platinum needle, flame-sterilized, is very convenient. The tests are read in forty-eight hours by nurse or physician. When an unduly large percentage of positive reactors is found, a search is made for a positive sputum case. When too many positives are found in one classroom, the room teacher is

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suspect. When too many positives are found in the entire school, a janitor, cook, or common teacher, such as gymnasium or music teacher, is suspect. When too many positives are found in one school district, the bus driver is suspect. When too many are found in one family, the family contacts are suspect. Similarly, the finger may point at contacts from church, or soda fountain, or playground, et cetera.

The parent-teacher groups have come to expect school surveys because they have been more heavily exposed to propaganda of this nature than other groups; and a mother expects, if her child has a positive Mantoux test, he should have an x-ray of his chest as the next logical step. Usually the positive Mantoux school child is x-rayed then, at some expense to the family or Christmas seal fund or county. The public health nurse spends too much of her time rounding up school children for x-rays, reporting the findings, and explaining what a positive Mantoux means to worried mothers.

Under the age of fourteen or fifteen practically none of these school children with positive Mantoux (that is, a primary tuberculosis) is likely to be sick. He may be a little under par, but he is not sick enough to be hospitalized and not benefited by hospitalization. This has been proved by years of work in so-called preventoriums which have been practically discontinued in the past decade.

After the age of fifteen the children react differently to tuberculosis. Most of them remain well, but a small percentage of those who previously had a positive Mantoux will develop clinical tuberculosis. They may do this anytime in later life.

A relatively large percentage of those who were previously negative Mantoux, when infected with tuberculosis at the age of fifteen to twenty-five, will develop progressive primary tuberculosis or at least a clinical tuberculosis which is quite dangerous. This is the galloping consumption group. These people are sick, consult their physician and are hospitalized promptly; but all too often nothing can be done for them. In this group the tuberculin test is often negative.

What do we get out of a tuberculin school survey? We get a tremendous file of charts showing negative tuberculins on a multitude of children. We get a relatively few positive Mantoux cases. X-rays are taken on perhaps 90 per cent of these and show primary tuberculosis in various stages of healing. Nothing is done, and nothing need be done about it in younger children. Over the age of fifteen, x-rays may show a few with progressive tuberculosis. These can be hospitalized with benefit and treated. In all too many surveys the subject is dropped here.

We get with careful follow-up chest x-rays of the school personnel, teachers, janitors, bus drivers (these ought to have x-rays every year anyway), and some kind of examination of a few family contacts. A few families are very cooperative. They worry about their progeny having tuberculosis. They will have and pay for chest roentgenograms and drag in Aunt Minnie for one. But Grandpa refuses to come in, or too often the father just never gets around to it; and if he waits more than a week or two, gets to talking it over with the boys and wondering what he would do if he actually had "it," he likely never will submit to examination. Some families just will not coöperate at all. This is the weakness of a school survey. The emphasis is greatest in the least fruitful group, the young children. Compulsion is least on the most fruitful group, the parents and old folks in the home. The mother worries and loses sleep, but the father just will not be ordered around by "school authorities." After all he graduated from school a long time ago.

There is no censure on those who refuse to be examined. In from one-third to one-half of the positive Mantoux children the source of infection cannot be located. A recent book has been written on this major weakness in the practice of what in theory looked like a good idea. To search for the source of infection of this group would involve just the sort of program that we now advocate, adult surveys.

Whom do we miss in a school survey? We miss the old folks; 5 per cent of people over sixty have active tuberculosis. They live alone or with grown-up families or in institutions. They have "bronchitis" or "colds" or cough from "too much smoking." They don't expect to feel well. But their tuberculosis does not make them very sick.

We miss the worker, father of a family, always too busy, always at work when the nurse calls, always working when the x-ray department is open, feels well, why should he have an x-ray?

We miss the worker, young, married, male or

female. He is not touched by a school survey, but is found, of course, when the baby dies of tuberculous meningitis—too late.

We miss the worker, single, living out or at home, never thinking of tuberculosis.

Remember that the school survey is designed to find positive sputum cases, nearly all of them moderately or far advanced. The number of minimal cases found by this method is very small, since the minimal cases do not often have positive sputum.

Tuberculosis is still the greatest cause of death in the working years, twenty-five to forty-five: tuberculosis 88, heart disease 70, pneumonia 52, suicide 29, cancer, 28, kidney disease 25, accidents 24. Tuberculosis is of little moment in school children. Why cannot we work on the problem directly instead of indirectly through school children?

We are getting away from this sort of program. Great preventoriums were set up nearly twenty years ago and early in the last decade abandoned as ineffective; children do not as a rule become seriously ill with tuberculosis in grade school years. In preschool years they are extremely susceptible to tuberculosis, but they succumb rapidly (with miliary or meningeal types) or get well after a while with the usual home care of a child of that age. So instead of making the rounds like a watchman every year in the schools, we want to prevent exposure of the children by finding the tuberculosis in the adults.

Our problem is to get as many people examined for tuberculosis as possible. The ideal is to have everyone have a chest x-ray every year; this would pick up early cancer of the lung, cardiac abnormalities, and a number of other nontuberculous conditions early also. But available funds and facilities are not adequate for this ideal. So we must concentrate our efforts on the more fruitful groups of society. School children are not one of these. Under the newer technique, the Mantoux test may be applied also to groups surveyed, but it should not be used as a screen except perhaps in preschool children. The Mantoux should better be applied where some chest condition is found by x-ray screening methods as a matter of establishing the diagnosis. So we are advocating group surveys as more effective than school surveys, and x-ray surveys as more suitable than tuberculin surveys.

We cannot go into the highways and byways and drag in people for examination. It is necessary to propagandize them. We must sell people that it is to their immediate advantage to have examinations. Selling an entire community might perhaps be easier than selling a group, but we cannot survey the entire population now. So we divide the people into approachable units.

In the group method of case-finding we go first to the group with the highest incidence, then work down to groups with lower incidence of tuberculosis. This is a direct approach to potentially diseased persons, not to their children. It is a cheaper method of case-finding than tuberculin school surveys. School children should be the last group on the list and need not be entirely neglected if sufficient funds are available.

Antituberculosis propaganda can be delivered effectively to the groups by speakers or pamphlets directly instead of through interest aroused in the doings of children. The forces that unite a group are nearly always willing to co-operate in an effort that will better the group.

From the standpoint of tuberculosis case-finding the groups of high incidence are:

1. The group of highest incidence is ex-patients from the sanatorium. This group is followed closely in any event, but a few get away from the habit and should be checked up.

2. The next highest incidence group is contacts of known cases. This group has been followed very religiously in some places, entirely neglected in others. This is the chief work of the tuberculosis public health nurse. Such a nursing service is indispensable in control of tuberculosis.

3. Hospital employes. Sanatorium employes have a relatively low incidence because they are careful and have regular checkups, but ordinary hospital employes, handling unrecognized tuberculous patients, are heavily exposed. They should have chest x-ray examinations every six months after the Mantoux becomes positive (and it becomes positive soon in nearly every hospital employe). They should have yearly x-ray examinations anyway.

4. All hospital admissions—every patient admitted to a hospital—should have a chest x-ray examination (unless already taken within six months). About one active case of pulmonary tuberculosis can be found in three hundred or less routine admission films. As a public service

health unit the hospital should be eager to do this at small profit. With he prospect of having to consider tuberculosis in hospital employes as a compensable disease, as it is in state institutions according to a recent Minnesota law and has been in many states previously, they should be doubly anxious to guard against exposure.

5. Sick people—all patients who consult a private physician because of illness or pregnancy—are very good prospects for tuberculosis. The x-ray of the chest is an expected part of every physical examination and should be just as much routine as bone x-rays in fracture cases. It is to the advantage of the patient, the hospital, and the physician that all three become x-ray-conscious. It is a matter of protection for all, like having one's tires checked before a trip to Florida. About one-half the patients in the sanatorium had been observed by private physicians for months or years and treated for everything from cerebral accident to rectal fistula before finding tuberculosis. As they come to realize the importance of early diagnosis, they become more volubly bitter about the physician who missed the diagnosis.

6. Institutionalized people—inmates and employes of asylums, mental hospitals, jails, old folks homes and similar institutions—are thrown together in crowded, unhygienic circumstances, and one case of tuberculosis leads to another. A survey through the state institutions in 1938 showed 81 cases of reinfection tuberculosis of 4,172 inmates tested. Dr. Hilleboe, now with United States Public Health Service, did this work. State law now requires chest x-rays of all new employes in state institutions.

But we shall not discover early tuberculosis among sick people alone. We must examine apparently well people to bring up the percentage discovered early, as against those found too late. Because it cost over a billion dollars to care for the tuberculous veterans of the first world war, the government undertook to take chest x-rays of all inductees for the present armed forces. About one per cent are rejected because of pulmonary tuberculosis. This is the greatest mass survey of all time.

Private industry, whether having war contracts or not, and not just to bring down the excess profits tax, has not been slow to take up the project. Many labor unions have made it a requirement of membership to have a chest x-ray and be free of active tuberculosis. And on the side of management, the progressive companies are taking chest x-rays on all employes.

Progressive school boards are requiring that teachers and other school personnel be free of active tuberculosis. The state law requires that no teacher, pupil, or employe about a school building, who is afflicted with tuberculosis, shall remain about such building without a certificate stating that he or she is not dangerous to others.

Since as yet it is not possible to x-ray all students and since all schools in Wabasha and Winona Counties have come to expect the Mantoux test, in the last few years the test has been performed on the high school seniors and also on the sophomores, the positives being x-rayed. We x-ray the college freshmen and, in fact, all the college students (many of whom are newcomers in our community) who have a positive Mantoux. I think it would be a good idea to x-ray all college freshmen and seniors, so that we would have a record of their heart size and any abnormality that may be present, and have a film to check later films against. But anyway we do a Mantoux test on all college students yearly; this is good in an educational way, as they begin to ask what this testing is all about and are more likely to follow through in later years. We can gradually change to the x-ray method in the next few years. But more important is that we realize that schools are not the best place to find tuberculosis.

We should x-ray all teachers and all school employes in grade schools, high schools and colleges. I think this is a good school program for the present. It leaves the nurse time for more effective work.

All food handlers should be required by law to be free from communicable tuberculosis, as well as syphilis and the typhoid-enteric organisms. It is an outrage for a person to be passed as free of tuberculosis after merely tapping his chest and listening a bit with the stethoscope. Usually only a far advanced tuberculosis is discovered with the stethoscope. We should carry on with surveys of the above groups and industrial groups as well. We shall have to work out some system to survey young women's groups. The childbearing women should be x-rayed as part of their examination in the prenatal period. Women in

ndustry, whether in shop or office, should have x-ray examinations.

This brings us to the next problem, the cost of the x-rays. In the old days when the x-ray was a makeshift, experimental thing, sort of an eighth wonder of the world, and every machine was a hand-built instrument, and the taking of films was a major adventure with high spoilage and many retakes, when the technique was experimental and the technician guessed at the required exposure time and gauged the voltage by the buzzing of the machine, perhaps then artistic fees were justified for an x-ray examination. But now it is a standard laboratory procedure. Now the technique is standard and any laboratory technician with little practice can take a good chest film. Cost of materials is not exorbitant. Tube cost is reduced to $.05 each exposure, and wear on the rest of the equipment about the same.

This brings us again to the newer x-ray methods—microfilm. Within the last few years, in an attempt to reduce x-ray costs and thus make chest x-ray films more available, experiments were undertaken in photographing the fluoroscopic image. Special fluoroscopic screens with a longer lag than usual and of color particularly suitable for photography were used. A very large and expensive fast lens was needed; this cost a great deal, perhaps $1,000. Ordinary plate holders were used, and because x-ray men were doing the work, they used x-ray film. X-ray film has an emulsion on both sides and is usually used, of course, with two intensifying screens. But after a year or so it was realized that the problem was no longer one of x-raying but simple photography; and thereafter a single emulsion film was used with one hundred per cent better results. The film size is 4 by 5 inches or 35 millimeter movie film or an intermediate size. The 4 by 5 film is read directly; the smaller ones must be projected or read with lenses. All are satisfactory for the ordinary chest. Extra large or thick chests may require the usual 14 by 17 film.

A very small percentage of pulmonary infiltration is missed by these methods, but occasionally a lesion will show more clearly on the microfilm than on the standard film. And again it is the very minimal case that is missed in contrast to the far advanced case that is sometimes missed in a tuberculin survey because of a negative Mantoux. Whenever a suspicious shadow is seen in the small films, a full-size chest film is taken.

These films can be taken at a cost of 25 cents when the technician's time is used to good advantage. The cost of a survey becomes relatively very little. The patient's name, age, address, and date of examination can be printed on the film. The report need be made only in cases showing some pathological condition. Only one visit of the patient is required. No needles are brought into play. No "poison" is injected into the bodies of our children. No return visit in the specified forty-eight hours is necessary, when all too often the person tested cannot be found. The uncoöperative group member is regarded with suspicion by fellow members so the percentage of response is remarkably high, often ninety-eight per cent.

As such a method has been so successful in group surveys, the time will soon come when the general population will be surveyed. Probably you have noticed the propaganda regarding Ely in St. Louis County, where the entire population of the town will be x-rayed. This is the start of an ambitious program to survey the entire county. A survey of the Mexican-descent citizens around San Antonio by small film methods has been very successful. In Cleveland, Ohio, an extensive industrial survey is being launched with the coöperation of labor groups.

Any population group with 1 per cent active tuberculosis is worth, on an economic basis (of cost per case found, reduction in sanatorium stay, work days lost, etc.), a full 14 by 17 chest x-ray survey. A population group of 1 per cent active tuberculosis (and this is the army rejection rate through the country) is surely worth a small film survey. This is a coming thing. It will require a great deal of education of the people, a great deal of support from those who understand illness, a great deal of discussion. The more the merrier; and with this thought planted, I hope we have much discussion. But meanwhile, get chest x-rays on all the sick people you can and all the food handlers you examine. Consider pleurisy as tuberculosis until proven otherwise, and don't trust a stethoscope to discover tuberculosis.

POSTMORTEM EXAMINATIONS

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IN SPITE of the fact that, since about the middle of the sixteenth century and throughout most of the intervening 400 years, a postmortem examination has been deemed desirable and often necessary to determine the cause of death, and in spite of the fact that, in medicolegal disputes in which criminal liability or financial returns are at stake, an examination of the deceased is usually regarded as imperative, there are many among us who strenuously object to this procedure and will not allow it to be performed on relatives or friends. Worse yet, in spite of numerous dissertations on, and demonstrations of, the scientific value of examinations after death, an antagonistic state of mind is often found among physicians, the very persons whose training and a large portion of whose special knowledge has been obtained from the same postmortem examinations to which they themselves are occasionally so firmly opposed.

The frequent refusal to allow, or, worse yet, the more frequent indifference toward, a "postmortem," displayed by this supposedly intelligent group of our professional confreres inevitably reflects itself in the minds of the laity and leads to the conclusion that something is fundamentally wrong either in the medical students' education or in the methods by which the examinations usually are conducted. Somewhat of both defects undoubtedly play a part. In the medical school, "posts" are under the auspices of a professional group whose main object is to expose, as expeditiously as possible, the principal lesions of the body. Morbid curiosity impels the student to stifle his natural emotions of repugnance at the spectacle for which he was more or less well prepared by his previous experiences in the anatomic dissecting room. "Poor Yorick," the deceased, has become for the medical student and the full-fledged physician, a thing apart from his own narrow world and in no way related to his own father or brother or later, perhaps, even his own patient.

"I hope you will not insult me by requesting permission to examine my father," was the astonishing remark of a young medical man to the attending physician. "One thing I wish understood, there will be no autopsy," a physician bellowed when interviewed after the death of his brother, who was also a physician. Both of these objectors would, no doubt, readily acknowledge the debt they personally owed to such examinations, but unquestionably the memory of those few examinations which they had attended, or in which they had taken part, made them unwilling to submit their own kin to such seemingly callous procedures.

And herein lies the first of two greatly needed reforms. Beginning with the "subjects" in the dissecting room, teachers and demonstrators of anatomy can and should emphasize that, after all, the body which is before them was once a human being "even as you and I" and but by the grace of Providence, that same body might represent a member of one of their own families or even one of themselves. By custom, religion and justifiable sentiment that body deserves all the *respect* that can reasonably be accorded to it. Loud talking and dissecting room jokes and antics should be taboo, the dieners might well observe more care in handling the remains and continually the privileges which such dissection afford, should be emphasized in a subdued atmosphere of quiet, dignified surroundings. Not one of the principals in a dissecting room, to say nothing of the students or attendants, would walk into a funeral director's establishment where empty coffins were on display without taking off his hat, laying aside his cigar or cigarette and lowering his voice. There is no dead body of a human being in the whole world which is not entitled to as much deference as a row of empty coffins.

If medical students are trained to observe callousness and indifference toward other people's dead in the dissecting room, what can be offered that is radically different when the students attend postmortem examinations in the old morgue of the city or county hospital. There is no necessity to describe the scene. Every physician in the world has witnessed it and in every place in the world where such examinations are per-

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formed the procedure does not vary materially either in method or in mental attitude toward the deceased. A studied indifference is apparently deemed necessary in order that the scientific or legal purposes of the examination may be expedited. The thought that some little time out for the deference to the dead would be fitting does not seem to have entered the minds of the examining physicians. Their agreement and universal disregard in this matter is an astonishing result of what a fairly unified custom of teaching and practice can promulgate. The need for a sweeping revision of both attitude and methods hardly needs any further affirmative argument.

The second suggested reform has to do with both education and practice concerning the inherent purposes of a postmortem examination. One may well doubt as to whether the broader implications of this phase of medical investigation have been sufficiently well stressed either in the medical school or in the physicians' contacts with pathologists in later life. One well-known physician was heard to remark: "There is no need for a postmortem examination in this case. We already know exactly why he died." Another, a famous surgeon, was said to have stated that he did not want any pathologist telling him why he had lost a patient because he knew all that was necessary before the patient died. There can be little question but that the education of these physicians and of many more like them was faulty in regard to the fundamental purpose of study of bodies after death. For this fault, pathologists themselves must assume a large portion of responsibility. Many of them remind one of that famous Florentine teacher, Benevenius, whose book, "On the Hidden Causes of Disease," was published in 1507, about five years after his death. He gave one of the earliest descriptions of gallstones in the human body and closed the account of his observation by this remark: "We procured the opening of the body and there were found small stones . . . which had collected in the membrane of the liver. . . . As we believed these to have been the cause of death we judged it *vain and useless* to dispute on obscure matters." The italics are mine and emphasize how little change has occurred in the minds of physicians during the short course of some 450 years.

It needs only a little thought to perceive that the stress in considering postmortem examinations should be placed on the importance of determining not only what produced the patient's death but, that which is frequently of far greater importance, what happened to that patient during his lifetime. The perfect study of each individual who has died would include the examination of his previous history as well as the appearance of his external and internal organs and tissues, and theoretically this study should make it possible to reconstruct the sequence, cause and development of each lesion that is discovered. Practically, many gaps in our knowledge are still present and our reconstructions are often very far from perfect. But every examination after death should aid in unraveling some obscure problems and should throw some revealing light on puzzling clinical phenomena. Hereditary tendencies, both good and bad, may be revealed. Incipient stages of many conditions may be studied and clearer notions of their pathogenesis obtained. The following may become known: The effects of the earlier diseases of childhood and of the relative influences of immunity to tuberculosis or other diseases; the importance of various lesions in the different organs for the explanation of physiologic disturbances; the possible usefulness of earlier and different methods of diagnosis and therapy and, just incidentally, the things the attending physician or surgeon might have done or might have omitted that temporarily would have changed the course of events. I say "incidentally" because as our aforementioned famous surgeon implied, those things are probably already known and there is little need or purpose in rubbing it in. If each postmortem examination was made to yield the utmost information, then it might make the pathologists, the attending physicians and the medical students even of future generations better, wiser and more capable men because of it. It would not be an exaggeration to conclude that prolongation of human life, easement of suffering and efficiency of medical care would be, and are, materially benefited by carefully performed postmortem studies.

But in this highly commendable and almost necessary procedure for the successful teaching of medical students and the promulgation of medical knowledge, let the pathologist and all the associated students and professional and nonprofessional attendants not forget for one mo-

ment to uphold the innate right of the human body, be it of a derelict or of a person of great and noble birth, to the utmost respect and consideration. Thereby will be added a dignity to the performance which has been lacking heretofore, and more readily can the broader values of the postmortem examination be emphasized alike to the student and his older colleagues. They may then recognize that such an examination is an unexampled privilege of the entire medical profession, which may and should be honored in its observance not alone on their city hospital "teaching" patients, but on private patients and even their own relatives.

ISOLATION FROM MILK SUPPLIES OF SPECIFIC TYPES OF GREEN-PRODUCING (ALPHA) STREPTOCOCCI AND THEIR THERMAL DEATH POINT IN MILK

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(Continued from June issue.)

Virulence of the Streptococci

The results obtained after the intracerebral inoculation of rabbits with streptococci isolated from raw and pasteurized milk in relation to epidemics of poliomyelitis, encephalitis, influenza and hiccup, and remote from epidemics, are summarized in Table V. It will be seen that the respective streptococci were highly specific.

From a study of streptococci as isolated from pasteurized milk by the serial dilution method, it was found that streptococci which grew at extremely high dilutions were usually specifically virulent. The following experiments will suffice to illustrate this point.

Young dextrose-brain broth cultures of fourteen strains of streptococci isolated in pure culture at dilutions ranging from 10^{-8} to 10^{-28} from pasteurized milk supplies during a major epidemic of poliomyelitis were inoculated intracerebrally into rabbits to determine specific virulence. Among twenty-one rabbits so inoculated, flaccid paralysis developed as the outstanding symptom in twelve, seven of which died. Moreover, when freshly isolated cultures of the streptococci were nebulized into the air of cages containing mice and added to the running water in which fish were kept, or when the streptococci were added to the drinking water of young mice, there occurred localization of the streptococci in the central nervous system, symptoms of en-

TABLE V. MORTALITY RATE, SYMPTOMS AND LESIONS AFTER INTRACEREBRAL INOCULATION OF RABBITS WITH STREPTOCOCCI ISOLATED FROM MILK SUPPLIES IN RELATION TO EPIDEMIC DISEASES

Milk supplies from which streptococci were isolated in relation to:	Strains	Rabbits			Symptoms (per cent)					Lesions of respiratory tract (per cent)*	
		Injected	Died		Spasms		Paralysis	Ataxia	Tremors	Trachea	Lungs
			No.	Per cent	Diaphragm	Other muscles					
Poliomyelitis	106	189	114	60	1.0	4.7	**44**	8.9	18	5.2	12
Encephalitis	30	37	25	68	2.7	**41**	8.1	**38**	**62**	44	56
Influenza	60	76	30	39	1.3	7.9	6.5	3.9	14	**50**	**93**
Hiccup	18	59	24	41	**54**	**75**	6.7	3.2	**44**	17	25
Control: remote from epidemics	38	51	16	31	2.0	2.0	5.9	2.0	5	13	19

*Of animals that died.

cephalitis and formation of encephalitis virus,[20] and death from encephalitis and flaccid paralysis,[18,26] respectively, in significant incidence.

The results obtained in mice after intraperitoneal, intracerebral and intranasal inoculation of streptococci freshly isolated in dextrose-brain broth from raw and pasteurized milk are summarized in Table VI.

The mortality rate, invasion of the blood stream and the greater tendency of the streptococci isolated from milk during epidemic periods to localize electively in comparison to that of strains isolated from milk supplies remote from epidemics is strikingly shown.

TABLE VI. VIRULENCE FOR MICE OF STREPTOCOCCI ISOLATED FROM MILK SUPPLIES IN RELATION TO EPIDEMIC DISEASE

Milk supplies from which streptococci were isolated in relation to:	Mortality rate and isolations of streptococci									
	Mice			Isolations of streptococci from:						
		Died		Blood		Brain		Pleural fluid	
	Injected*	No.	%	Animals	%	Animals	%	Animals	%
Epidemics of encephalitis, poliomyelitis and hiccup	396	209	53	73	41	92	**51**	17	18
Epidemic influenza	470	311	66	265	34	230	22	141	**45**
Nonepidemic diseases	188	81	43	55	23	19	5	20	25
Total	1,054	601	57	393	34	341	29	178	40

*Intraperitoneally, intracerebrally or intranasally.

TABLE VII. CATAPHORETIC TIME OF STREPTOCOCCI FROM MILK AND OTHER DAIRY PRODUCTS IN RELATION TO EPIDEMIC COLDS, INFLUENZA, POLIOMYELITIS AND ENCEPHALITIS AND INTEREPIDEMIC PERIODS

	Source of streptococci	Strains or Cases	Cultures	Streptococci timed	Percentages of streptococci distributed in cataphoretic time intervals of half seconds						
					1.7 to 2.1	2.2 to 2.6	2.7 to 3.1	3.2 to 3.6	3.7 to 4.1	4.2 to 4.6	4.7 to 5.1
Raw and pasteurized milk	Remote from colds	34	35	558	7	21	**37**	17	14	2	2
	During epidemic colds	30	41	803	5	**22**	**24**	**29**	13	4	2
	Remote from influenza	22	31	601	9	16	**51**	10	11	1	2
	During epidemic influenza	62	65	751	3	9	11	17	**19**	**18**	**22**
	Remote from epidemic poliomyelitis	54	62	878	2	19	**32**	26	16	3	2
	During epidemic poliomyelitis: After animal passage	51	51	798	**11**	9	5	9	**49**	13	5
	During epidemic poliomyelitis: As isolated	71	101	1,804	**12**	13	10	14	**35**	12	3
Dairy products	Remote from encephalitis	54	54	1,044	9	23	**45**	13	8	1	1
	During epidemic encephalitis St. Louis (1933)	139	139	2,483	**30**	14	23	11	11	2	10

Specificity of Streptococci as Shown by Cataphoresis

It has been shown elsewhere that alpha streptococci having virulence and other properties characteristic of streptococci associated with epidemic diseases occur commonly in milk and other dairy products, as well as in air, in water and in emulsions made of flies and mosquitoes at the time of epidemics.[9,10,13] I have applied the cataphoretic method of study to strains of streptococci isolated from milk supplies.[9,12,16] The distribution of cataphoretic time of streptococci isolated from raw and pasteurized milk and other dairy products during and remote from epidemics of colds, influenza, poliomyelitis and encephalitis is summarized in Table VII. The mode of the streptococci isolated from milk at the time of the respective epidemics was very different, and was characteristic of the streptococci isolated from patients suffering from the respective epidemic disease.[13,27] In contrast, the mode of the streptococci isolated from milk remote from epidemics resembled that of streptococci isolated from the nasopharynges of well persons and persons who had diseases not caused by streptococci remote from epidemics, and of epidemic strains after prolonged cultivation on artificial mediums.

TABLE VIII. AGGLUTINATION OF STREPTOCOCCI ISOLATED FROM MILK

Milk from which streptococci were isolated in relation to:	Strains	Percentage incidence of specific agglutination* by antiserums prepared with streptococci from			
		Polio-myelitis	Enceph-alitis	Ar-thritis	In-fluenza
Poliomyelitis	152	**84**	7.2	2.6	1.3
Encephalitis	112	13	**71**	—	0.88
Influenza	70	4.3	13	11	**69**
Hiccup	20	—	**80**	—	20
Control: remote from epidemics	49	14	18	18	16

*No specific agglutination by normal horse serum. Agglutination was considered specific if greater in the different dilutions of a given antiserum, or if it occurred in at least tenfold greater dilution of the specific antiserum, than of control antiserum.

TABLE IX. COMPARATIVE VALUE OF DIFFERENT CULTURE MEDIUMS IN DETERMINING THE THERMAL DEATH POINT OF STREPTOCOCCI SUSPENDED IN AUTOCLAVED MILK

Test mediums	Suspensions of streptococci in milk heated at					
	63°C., 30 minutes		68°C., 30 minutes		73°C., 30 minutes	
	Cul-tures	Per cent yielding strep-tococci	Cul-tures	Per cent yielding strep-tococci	Cul-tures	Per cent yielding strep-tococci
Dextrose-brain broth	674	**38**	250	14	477	0
Dextrose broth	206	13	110	4.5	81	0
Blood-agar	539	13	33	7.2	366	0
Autoclaved milk	210	24	38	0	131	0

Serologic Specificity of Streptococci

By the special methods used successfully in previous studies,[17] a large number of agglutination experiments was carried out with the streptococci isolated from milk and other dairy products using convalescent human serum and the serum of horses hyperimmunized with streptococci obtained from persons who were ill with the respective diseases. The results obtained with the hyperimmune serums, according to epidemics, are summarized in Table VIII. A high degree of specificity was found for each of the groups of epidemic strains studied, which was not the case for strains isolated from milk remote from these epidemics. The specific agglutinin content of the serum of persons for the respective strains was found to be increased during convalescence.

Resistance to Heat of Epidemic and Non-epidemic Strains of Alpha Streptococci

Streptococci from various sources, on isolation and after prolonged cultivation on artificial mediums, were suspended in autoclaved milk and heated at 63, 68 and 73° C. (145.4, 154.4 and 163.4° F.) for thirty minutes to test resistance of the various strains to heat. Cultures were then made routinely in dextrose-brain broth, and frequently also in dextrose broth, in autoclaved milk and on blood-agar plates. The importance of the use of a highly favorable medium, such as dextrose-brain broth, to determine whether the streptococci resisted heating at the different temperatures, is shown in Table IX. After heating at 63°C. (145.4° F.) (pasteurizing temperature), the incidence of isolation of streptococci in dextrose-brain broth was uniformly higher (38 per cent) than in autoclaved milk (24 per cent), dextrose broth (13 per cent) and blood-agar (13 per cent). Heating at 68° C. (154.4° F.) for thirty minutes, and at 73° C. (163.4° F.) for ten or twenty minutes did not suffice to kill all streptococci in milk, whereas heating at 73°C. (163.4° F.) for thirty minutes invariably did suffice. On the basis of these results, dextrose-brain broth was used routinely for making cultures from milk supplies as obtained at the time of study, after pasteurization of raw milk and after repasteurization, under controlled condition in the laboratory, of commercially pasteurized milk, and for testing the heat-resistance of streptococci suspended in milk.

The total incidence of isolations of streptococci in dextrose-brain broth after pasteurization or heating (63° C. [145.4° F.] and 73° C. [163.4° F.] for thirty minutes under controlled conditions) of suspensions of streptococci in milk is summarized in Table X. The incidence of isolation of streptococci after pasteurization at the usual temperature was highest (86 per cent) in the case of epidemic strains that had resisted previous commercial or laboratory pasteurization and was next highest in the case of epidemic strains obtained from milk supplies (45 per cent), and from persons having epidemic encephalitis (39 per cent). The incidence of isolation after pasteurization in milk of streptococci obtained from persons having poliomyelitis (31 per cent) or influenza (21 per cent), from indoor and outdoor air (33 per cent) and from water (32 per cent) in relation to poliomyelitis, encephalitis and influenza, also was significantly higher than after pasteurization of streptococci obtained from well persons (13 per cent) or persons ill

TABLE X. RESISTANCE TO HEAT OF ALPHA STREPTOCOCCI ON ISOLATION AND AFTER PROLONGED CULTIVATION IN RELATION TO EPIDEMIC AND NONEPIDEMIC DISEASES

Source of streptococci	Suspensions of streptococci in milk heated at 63°C., 30 minutes: Strains	63°C., 30 minutes: Cultures	63°C., 30 minutes: Per cent yielding streptococci*	73°C., 30 minutes: Strains	73°C., 30 minutes: Cultures	73°C., 30 minutes: Per cent yielding streptococci*
Persons ill with: Poliomyelitis	137	192	31	89	130	0
Persons ill with: Encephalitis	117	171	39	106	144	0
Persons ill with: Influenza	29	39	21	20	27	0
Persons ill with: Nonepidemic disease	39	52	10	15	18	0
Well persons remote from epidemics	62	75	13	36	37	0
Milk in relation to poliomyelitis, encephalitis and influenza	202	242	45	202	242	0
Water, sewage and mosquitoes in relation to poliomyelitis	41	59	32	39	55	0
Indoor and outdoor air in relation to poliomyelitis, encephalitis and influenza	76	112	33	23	44	0
Epidemic strains that had resisted heating to 63°C. for 30 minutes on isolation	21	21	86	21	21	0
Epidemic strains after prolonged cultivation on artificial mediums	49	63	0.16	49	63	0
Totals: Freshly isolated strains from epidemic diseases	623	836	38	500	663	0
Totals: Freshly isolated strains from nonepidemic sources, and epidemic strains after prolonged cultivation	150	190	8	100	118	0

*In dextrose-brain broth cultures.

with chronic disease (10 per cent) remote from epidemics and than after pasteurization of epidemic strains after prolonged cultivation on artificial mediums (0.16 per cent). Thirty-eight per cent of 836 cultures of streptococci representing 623 epidemic strains, and 8 per cent of 190 cultures representing 150 nonepidemic strains, resisted pasteurization at 63° C. (145.4° F.) for thirty minutes. Pasteurization at 73° C. (163.4° F.) for thirty minutes sufficed to kill the streptococci in every instance, regardless of their source or time after isolation.

To check further the technical procedures used in these studies, autoclaved milk was inoculated with mixtures of young cultures of Bacillus subtilis, Escherichia coli, hemolytic or beta type of streptococci and staphylococci, and then pasteurized under controlled conditions at 63° C. (145.4° F.) for thirty minutes. Escherichia coli, beta type of streptococci and staphylococci were killed in every instance and Bacillus subtilis was killed in most instances.

TABLE XI. INCIDENCE OF ISOLATION OF ALPHA STREPTOCOCCI FROM STOOLS AFTER HEATING AT 63°C. FOR THIRTY MINUTES

Source of stools	Specimens cultured	Incidence of isolation of alpha streptococci after heating suspensions of stools at 63°C. for thirty minutes: Specimens yielding streptococci: Number	Per cent
Persons ill with: Acute poliomyelitis	72	36	**50**
Persons ill with: Acute encephalitis	27	12	**44**
Persons convalescent from poliomyelitis	32	7	**22**
Well persons remote from epidemics	61	2	3

To compare the resistance to heat of streptococci that had grown in vivo with that of the freshly isolated alpha streptococci associated with epidemic and other diseases and those from well persons remote from epidemics, 10 per cent emulsions in saline solution of stools of patients who had poliomyelitis or encephalitis and emulsions of stools of well persons remote from epidemics were diluted threefold in saline solution and heated at 63° C. (145.4° F.) for thirty minutes in the laboratory under controlled conditions. Sterility tests were made in dextrose-brain broth. The scope and results of these experiments are shown in Table XI. Alpha streptococci, nearly always in mixture with gram-positive bacilli (Clostridium perfringens) and only occasionally with Echerichia coli, were isolated far more often from pasteurized suspensions of stool specimens that had been obtained from persons ill with poliomyelitis (50 per cent) or encephalitis (44 per cent) than from persons convalescent from poliomyelitis (22 per cent) and than from well persons remote from epidemics (3 per cent).

Epidemiologic Significance of Streptococci Isolated from Milk

Evidence was not lacking that milk supplies from which specific types of alpha streptococci were isolated were responsible for epidemic outbreaks and sporadic cases. One institutional out-

break of acute poliomyelitis at a college was traced to milk.[10] Spread of the disease stopped abruptly when the use of the milk in which large numbers of the poliomyelitic type of streptococcus were demonstrated was discontinued.

A rural outbreak of poliomyelitis[27] was traced to improperly refrigerated raw milk that was supplied by several dairies, in the herds of which the streptococcus was demonstrated in milk obtained directly from cows. In a major outbreak of poliomyelitis,[28] streptococci having "poliomyelitic" cataphoretic velocity and which produced flaccid paralysis in rabbits were isolated from a brand of pasteurized milk supplied to families in which the incidence of poliomyelitis was far greater than in families in which other brands of pasteurized milk were used and from which this type of streptococcus was not obtained. In still another epidemic of poliomyelitis[14] in which several brands of milk were used, milk obtained where cases had occurred revealed the streptococcus whereas no cases could be traced to the milk from which the streptococcus could not be isolated and which, through the foresight of the dairyman, was pasteurized at 155° F. instead of at the usual 145° F. In many instances composite milk supplies and milk obtained in a sterile manner directly from cows (which usually showed no evidence of disease of udders) supplying the milk for isolated family groups where one or more cases of poliomyelitis, encephalitis,[22] influenza or persistent hiccup had occurred were shown to contain the respective specific types of streptococci. In one institutional outbreak of influenza the alpha type of streptococcic flora obtained from the nasopharynges of patients and similar flora contained in suspensions of a brand of cheese which the patients had consumed were indistinguishable. The epidemic disappeared promptly after the cheese was eliminated from the diet.

During institutional and community outbreaks of influenza, the number of colonies of streptococci that grew in soft dextrose-brain agar and on blood-agar and the pneumotropic virulence of the streptococci, as demonstrated by inoculation of animals with streptococci isolated in dextrose-brain broth from raw and pasteurized milk, were uniformly much higher than in the case of the same milk supplies three months after the epidemic had disappeared.

An institutional outbreak of acute appendicitis was traced to ice cream and an outbreak of epidemic parotitis (mumps) was traced to butter and cheese from which alpha streptococci that produced appendicitis in rabbits and parotitis in dogs were isolated.[23] The ice cream was a local product, but the butter and cheese had been manufactured far remote from the outbreak studied, at a time when epidemic parotitis was prevalent. An epidemic of sore throat associated with a high incidence of myositis was traced to a streptococcus in the milk supply.[24] The streptococcus, on isolation from throats of patients and from the milk, produced myositis in rabbits following intravenous injection.

Milk supplies, even pasteurized supplies, sometimes appeared to be responsible for the persistence of mild symptoms after attacks of epidemic disease, and for mild nonepidemic conditions in which the milk supplies were not considered as a possible source of infection. In several cases of perforating gastric ulcer and of gastric hemorrhage due to ulcer, the milk used was found to contain large numbers of the ulcer-producing type of streptococcus. Slight fever among patients convalescing from epidemic poliomyelitis and encephalitis and symptoms, such as persistent cough and recurring sore throat, after attacks of colds and influenza often disappeared when the respective milk supplies from which the streptococci were isolated were boiled or were eliminated.

Discussion and Summary

Results of these studies on alpha streptococci in relation to milk supplies are in accord with results of other workers, but through the use of brain-containing mediums they have been carried a step further, in that the incidence of isolation of streptococci has been higher and in that specificity of streptococci characteristic of those associated with certain epidemic and nonepidemic diseases has been demonstrated. The brain-containing mediums, especially in serial dilution cultures, were essential for the isolation of the virulent, epidemic strains without loss of specificity. The isolation of alpha streptococci from milk after pasteurization has been reported by Ayers and Johnson,[2,3] Stark and Stark,[33] Park,[6] Bickwith and Eddie cited by Sears and Benson,[29] Kitchen,[4] Seibel[30] and others. In the original experiments which led to pasteurization of milk as now practiced, only a few tests were

performed on the resistance to heat of the alpa type of streptococci.[5,6,7] These organisms isolated by methods then available were found more resistant to heat than hemolytic streptococci, but were considered as of little or no epidemiologic importance.[7]

The streptococci isolated by our methods from milk supplies during epidemics of encephalitis, poliomyelitis, influenza and hiccup manifested respective specific virulence or disease-producing properties and had characteristic distribution curves of cataphoretic velocity. They were agglutinated specifically by the respective antistreptococcic serums and they often grew in milk at usual refrigerator temperatures and in far higher serial dilutions in dextrose-brain broth and dextrose-brain agar than streptococci from milk supplies remote from epidemics, resembling, in these respects, the streptococci isolated from the respective patients and viruses.[16] Streptococci present in milk during epidemics and those isolated from patients were unusually resistant to heat on isolation, often remaining viable, as shown by the use of dextrose-brain broth, after being subjected to commercial pasteurization and pasteurization under controlled conditions in the laboratory at 63° C. (145.4° F.) for thirty minutes. The specific properties, including high resistance to heat, disappeared abruptly on cultivation on the usual mediums and more slowly on cultivation in the brain-containing mediums. The relation of the streptococci isolated in these studies to Streptococcus durans or Streptococcus zymogenes isolated from pasteurized milk by Sherman and Wing[31] was not determined.

Clinical and experimental evidence obtained indicates (1) that raw, and less often pasteurized, milk supplies shown to contain alpha streptococci true to type are probable sources of infection; (2) that during epidemics the streptococci normally present in respiratory and intestinal tracts of persons and broadly present in nature, including milk, acquire virulence and other properties characteristic of the streptococci associated with the respective epidemics; (3) that the incidence of diseases resulting from acquired specific virulence of the streptococci is increased by the drinking of milk containing the specifically virulent organisms.[10]

The experimental production from neurotropic or pneumotropic alpha streptococci of filtrable infectious agents resembling the viruses[9,15,20,21] of encephalitis, poliomyelitis and influenza,[25] respectively, and the demonstration of small, short-chain forming diplococci in filtrates of poliomyelitis[19] and encephalitis[11] virus and in filtrates of experimental infectious agents produced from streptococci,[19] indicate that epidemic types of streptococci in milk may be a source of the respective viruses. Regardless of whether specifically virulent alpha streptococci, which our methods have shown to be present consistently in raw and pasteurized milk supplies during epidemics, play a primary or secondary role in causation and spread of diseases now attributed to virus, the presence of viable streptococci in milk, even of those not at the moment virulent, should be regarded as an active or potential hazard to health and hence should be eliminated.

Pasteurization of milk by the holding and flash methods, as now practiced, while apparently adequate to kill beta streptococci, nonvirulent alpha streptococci and other pathogenic organisms commonly present in raw milk, has been found inadequate to kill specifically virulent alpha streptococci commonly present in milk supplies during epidemics of encephalitis, poliomyelitis, respiratory infections, influenza and hiccup. More efficient methods than are now generally used for the detection and killing of these organisms in milk are clearly indicated. To accomplish this ideal, slight, easily applicable modifications of methods now in general use fortunately have been found.

From the data obtained it is suggested (1) that in addition to the standard methods now in general use for the bacteriologic examination of milk and other dairy products without due regard to type or virulence of the organisms milk contains, dextrose-brain broth and dextrose-brain agar be used because highly favorable for the isolation of specifically virulent streptococci; (2) that growth of streptococci from raw and pasteurized milk supplies in high dilutions in these mediums be considered presumptive evidence of virulence of the organisms, and (3) that milk be pasteurized routinely at 73° C. (163.4° F.) for thirty minutes, or at least that it be pasteurized at this temperature during epidemics when, as has been shown, specifically virulent streptococci are present which resist the present-day holding and flash methods of pasteurization. I am informed that pasteurization equipment now in general use could be adapted to this higher

temperature merely by adjustment of the temperature regulator. After pasteurization of bulk milk at this higher temperature the cream-line usually is not obliterated and the slight alteration of taste which occurs should not be considered objectionable, but rather as evidence that the milk was adequately heated to kill specifically virulent as well as saprophytic alpha streptococci.

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MUCH SICKNESS CAUSED BY FAILURE TO GROW UP

Achieving grown-up, mature feelings and attitudes is a difficult job, but an important one from the standpoint of both health and happiness. Many of the people who crowd the doctors' offices are sick, with real aches and pains and disorders of digestion or other functions, because they have not acquired emotional maturity. The goals which describe this kind of maturity are given by Dr. Maurice Levine, of the University of Cincinnati, in a recent book for doctors, *Psychotherapy in Medical Practice*. Here they are:

1. Ability to be guided by reality rather than by fears.
2. Use of long-term values.
3. Grown-up conscience.
4. Independence.
5. Capacity to "love" someone else, but with an enlightened self-interest.
6. A reasonable dependence.
7. A reasonable aggressiveness.
8. Healthy defense mechanisms.
9. Good sexual adjustment with acceptance of own gender.
10. Good work-adjustment.

If you are confused about how a person can be both independent and reasonably dependent, the explanation is that one should not be a "clinging vine" woman or the type of man who expects to be babied by his wife, but should be able to stand on one's own feet and make decisions, yet able to take useful advice and to both give and receive love and affection. It is just as babyish to be always giving as to be always demanding.

For an example of being guided by reality, Dr. Levine gives the case of a mother whose child in reality interrupts too frequently. The mother who thinks the child's behavior is cute is immature, but so is the mother who sees such behavior as the first step in a criminal career. The grown-up mother neither praises the child nor punishes him severely for the interruption, but tries to understand why he interrupted and to help him understand why he should wait his turn to speak.—*Science News Letter*, June 26, 1943.

MINNESOTA MATERNAL MORTALITY STUDY

General Summary

By the Maternal Mortality Committee of the Committee on Maternal Health of the Minnesota State Medical Association

(Continued from June issue.)

The Committee for the Minnesota Maternity Mortality Study laid down the following as one stipulation for minimum requirements for adequate prenatal care: pelvimetry, to include mensuration of the anteroposterior diameter of the inlet (internal), mensuration of the intertuberous diameter and palpation of the sacrum (internal). These have long been considered minimum requirements for pelvimetry but how far the medical profession has strayed from its medical school teaching is shown in Table XIV. Of ninety-four patients (84 per cent) who were registered, i.e., had been given prenatal care, seventy-seven, or 82 per cent, had no pelvic mensuration or less than required by the minimum standard clause. When asked for the pelvic measurements, most of the physicians who cared for these patients declared that they "didn't consider mensuration necessary since the patient was a multipara," they "never took measurements unless these seemed indicated," they "didn't believe in pelvic measurements," or that the "record was lost," "misplaced," or "locked in a safe that could not be opened until the next day" or some specified time after the investigator would have departed. These responses came even in regard to patients in whom there was good evidence from past obstetrical history that there probably was pelvic pathology. No tabulation was made of the cases in which no medical record was kept by the physician or a grossly inadequate history taken, but these instances were legion and discovered during interview of the physician. In not a few instances the investigator obtained much more information about the case from hospital records or attendants than at the appointment with the physician. Without a doubt the great majority of physicians' office records were of little value as regards accurate information on pertinent data, if indeed there were any records. Moreover, the same can be said of hospital records in a great many instances.

The following minimum requirements for adequate obstetrical care were adopted by the Committee for the Minnesota Maternal Mortality Study:

TABLE XIV. TYPE OF PELVIS

		No. of Cases	Per Cent of Cases
Not measured		95	84.9
Registered	77		
Unregistered	18		
Measured		17	15.2
Normal	9		
Generally contracted funnel	2		
Funnel typical	4		
Generally contracted rachitic	1		
Generally contracted typical	1		
Totals		112	100.1

Minimum Requirements for Adequate Obstetrical Care

(Adopted by the Minnesota Maternal Mortality Committee)

First prenatal visit

1. Adequate history and general physical examination with accurate follow-up of any abnormality revealed by these.
2. Pelvimetry to include anteroposterior of inlet (internal), palpation of sacrum, and intertuberous diameter.
3. Blood Wassermann.

Routine prenatal visits

1. Blood pressure determination.
2. Urinalysis, especially for albuminuria.
3. Weight determination.
4. Abdominal palpation during last two months of gestation.
5. Reasonably adequate study of abnormalities presenting themselves during these visits.

Labor and delivery

1. Adequate use of generally recognized obstetric procedures.
2. Observance of adequate asepsis.

Postpartum care

1. Reasonable promptness in the recognition of abnormalities.
2. Reasonable promptness in the institution of adequate treatment.

Postmortem examination

1. Completeness in itself or as an adjunct to clinical observation.

Death certificate

1. Accuracy in assignment of cause of death.
2. Completeness of data requested.

Birth certificate

1. Completeness in reporting desired data.
2. Accuracy of data.

Death certificate of child

1. Accuracy in assignment of cause of death.
2. Completeness of requested data.

Using these as a basis for evaluation, Tables XV, XVI, and XVII are summaries of the care given the patients in this series prenatally, in labor and delivery, and in the postpartum period. Whenever faulty care was obviously responsible, in whole or in part, for the maternal death, it was also classified as con-

TABLE XV. PRENATAL CARE GIVEN PATIENT

	No. of Cases	Per Cent of Cases	
None	8*	7.1	
Adequate	2	1.8	
Faulty but non-contributory	47	42.0	91.1%
Faulty and contributory	55	49.1	
Totals	112	100.0	

*This figure does not coincide with the number of unregistered patients since in the remaining ten cases, the absence of prenatal care was considered a contributory factor in the causation of death; in almost all of the latter it was patient responsibility.

TABLE XVI. CARE GIVEN PATIENTS IN LABOR AND FOR DELIVERY

	No. of Cases	Per Cent of Cases	
None	22	19.6	
Adequate	7	6.3	
Faulty but non-contributory	22	19.6	74.1%
Faulty and contributory	61	54.5	
Totals	112	100.0	

TABLE XVII. POSTPARTUM CARE GIVEN PATIENTS

	No. of Cases	Per Cent of Cases	
None	28*	25.0	
Adequate	4	3.6	
Faulty but non-contributory	13	11.6	71.4%
Faulty and contributory	67	59.8	
Totals	112	100.0	

*All died undelivered (23) or immediately following delivery except two patients with postpartum hemorrhage who lived two and three hours respectively after delivery but had no active postpartum care in spite of the fact that both were attended at delivery by physicians.

TABLE XVIII. TIME OF OBTAINING BLOOD WASSERMANN IN CURRENT PREGNANCY

Time taken	No. of Cases	Per Cent of Cases	
Not taken in current pregnancy	70	62.5	73.2%
Not taken at first prenatal visit	12*	10.7	
Taken at first visit			
Negative	29	25.9	
Positive	1	0.9	
Totals	112	100.0	

*All were negative and were obtained after the first prenatal visit or after later hospitalization, some after delivery.

TABLE XIX. COMPLETENESS AND CORRECTNESS OF MATERNAL DEATH CERTIFICATE

Quality	No. of Cases	Per Cent of Cases
Complete and correct	19	17.0
Complete but incorrect	25	22.3
Incomplete, otherwise correct	22	19.6
Incomplete and incorrect	40	35.7
Complete but false	5	4.5
Complete, correctness not determinable	1	0.9
Totals	112	100.0

tributory. The startling revelations in these tables are that adequate care was given in only 1.8 per cent of the cases in the prenatal period, 6.3 per cent in labor and for delivery, and 3.6 per cent in the postpartum period, while care was faulty from 71 to 91 per cent in the various phases.

One phase of prenatal care, besides pelvic mensuration, which merits special consideration is the routine taking of the blood Wassermann. This, like pelvic mensuration, has long been considered an absolute essential to adequate prenatal care. There can never be the excuse that there is no available laboratory facility for obtaining this test in the State of Minnesota since the State Board of Health operates an adequate laboratory and performs these tests without charge. In spite of these facts, 73.2 per cent of the patients did not have venapuncture done for the Wassermann test at the first prenatal visit; and, what is worse, 62.5 per cent had no Wassermann test in association with the pregnancy, as is seen in Table XVIII. The one patient with a known positive blood Wassermann reaction succumbed to encephalitis from arsenic therapy. Whether this was due to the more than usual frequency of administration of the arsenical or a true sensitivity of the patient to the drug may be debated.

Completeness and correctness of maternal death and of birth certificates are summarized in Tables XIX and XX. Examination of photostatic copies of these certificates in connection with the completed maternal mortality study made it fully apparent that physicians and coroners signing these certificates gave very little time or thought to correctness or completeness. Indeed, in five instances, 4.5 per cent, the death certificates were actually falsified as to the cause of death.

Several of these have already been mentioned in other connections. An unmarried woman is presumed to have died of veronal poisoning whereas the physician after collaborating on an inadequate postmortem examination declared death due to diabetes. He did this in order to "save the relatives." One patient was delivered by a consultant employing elective cesarean section at thirty-seven weeks gestation, but thereafter what care there was came primarily from the original general practitioner. Death on the eighth day was

TABLE XX. COMPLETENESS AND CORRECTNESS OF BIRTH AND STILLBIRTH CERTIFICATES

	No. of Cases	Per Cent of Cases
Complete and correct	9	8.0
Complete and incorrect	3	2.7
Incomplete, otherwise correct	37	33.0
Incomplete and incorrect	24	21.4
Not reported, required by law	5†	4.5
Not reported, not required	34‡	30.4
Early abortion 13		
Died undelivered 21*		
Totals	112	100.0

†Does not include three known instances in which birth or stillbirth certificates were not filed until the physician was asked by the Minnesota Bureau of Vital Statistics to do so. The absence of these was discovered in matching maternal death certificates for companion birth certificates.
‡The Minnesota law is interpreted as requiring a birth certificate if the pregnancy has advanced to at least twenty weeks whether live-birth or stillbirth.
*Does not include the two cases delivered by postmortem cesarean section.

TABLE XXI. PRIMARY OR IMMEDIATE CAUSES OF DEATH

Causes of Death		No. of Cases	Per Cent of Cases
Toxemia		7	6.25
Eclampsia	4		
Antepartum	1		
Intra-and postpartum	1		
Postpartum	2		
Arteriolosclerosis	3		
Cardiovasular renal disease	1		
Cerebral hemorrhage	2		
Infection		30	26.79
Pul. embolism from thrombophlebitis	9		
Peritonitis after cesarean section	2		
Peritonitis—bowel obstruction after C.S.	1		
Septicemia from puerperal infection	5		
Septic abortion	7		
Septicemia from cellulitis of chin	1		
Peritonitis from appendectomy	3		
Peritonitis from visceral perforation	1		
Sepsis of undetermined origin	1		
Shock and hemorrhage		30	26.79
Birth traumas	1		
Retroperitoneal hematoma (spontaneous)	1		
Postpartum hemorrhage	9		
Postoperative shock	2		
Intra-abdominal hemorrhage (ectopic)	3		
Premature separation of placenta	3		
Inversion of uterus	1		
Shock from transfusion reaction	1		
Ruptured uterus (traumatic)	2		
Shock from op. del. on severe cardiac	2		
Hemorrhage from placenta previa	4		
Unexplained (mid-forceps del., 54 hr. labor)	1		
Other obstetrical complications		23	20.54
Adrenal hemorrhage (fulminating pre-eclampsia)	1		
Anesthetic death	3		
Suicide (eclampsia with psychosis)	1		
Cerebral hemorrhage (?rupture of aneurysm)	1		
Pneumonia	6		
Transfusion reaction	2		
Cardiac failure	5		
Alkalosis	1		
Hypoglycemic shock	3		
Non-obstetrical complications		19	16.96
Subacute bacterial endocarditis	2		
Automobile accident	1		
Acute anterior poliomyelitis	3		
Suicide and/or homicide	2		
Meningitis (otitis media)	1		
Brain tumor	1		
Carcinomatosis (melanoma of scalp)	1		
Bowel obstruction (ca. of trans. colon)	1		
Encephalitis (arsenic therapy)	1		
Actinomycetic meningitis	1		
Pulmonary tuberculosis	3		
Peritonitis (mesenteric thrombosis)	1		
Peritonitis (small bowel obstruction)	1		
Not determinable		3	2.67
(?) Late vomiting of pregnancy with pyelitis	1		
(?) air embolism (vaginal insufflation)	1		
Sudden (advanced pulmonary tuberculosis)	1		
Totals		112	100.00

clearly due to postoperative peritonitis but the original physician would not request permission for autopsy and declared death due to pulmonary embolism, since "what the relatives did not know would not hurt them." A patient was delivered of her second child at home and died one and one-fourth hours later as a result of postpartum hemorrhage but the physician claimed death due to "pulmonary embolus." Another patient dying of postpartum hemorrhage three hours after spontaneous delivery at forty-two weeks' gestation was declared to have died of "pulmonary embolus." Finally, the physician who packed a vagina because of profuse antepartum vaginal bleeding, left without intentions of further therapy, and allowed the patient to bleed to death without transfusion or other specific therapy after four hours of hospitalization, refused to sign the death certificate because he "felt no responsibility for the patient since she had previously been delivered by another physician." The coroner signed the certificate, was correct in assignment of cause of death, but falsified when he declared that "she was rushed to the hospital." Actually four hours intervened between the physician's visit and hospitalization.

All vital statistics reports are based upon information obtained from these certificates which are signed by attending physicians or by duly authorized representatives of the law. Such reports can be no more accurate or reliable than the data upon which they are based. The high percentage of incompleteness and incorrectness together with the real error produced by falsification in these data make the reports far from their desired accuracy and reliability. All certificates signed by coroners are so inferior that it is doubted whether it is wise to continue to allow these laymen to file such certificates. If all remaining signers, the physicians, were "statistics-minded," the results would reach a high degree of accuracy.

The primary or immediate causes of death are listed in Table XXI. The causes of death enumerated here are those determined by the Committee from the completed studies and are independent of the causes listed on the death certificates. The distribution of the causes of death coincides fairly well with that shown by Peckham for the Counties of Maryland[3] and for the United States Registration Area as well as that

TABLE XXII. PREVENTABILITY OF AND RESPONSIBILITY FOR DEATH

		No. of Cases	Per Cent of Cases
Preventable		82	73.21
Physician responsibility	68		
Patient responsibility	4		
Physician and patient responsibility	7		
Physician and disease responsibility	3		
Nonpreventable		27	24.11
Not determinable		3	2.67
Totals		112	99.99

TABLE XXIII. ECONOMIC STATUS OF PATIENT AND RESPONSIBILITY OF DEATH

Economic Status of Patient	Preventability of Death		No. of Cases	Per Cent of Cases
Charity			27	24.11
	Nonpreventable	10		
	Preventable	16		
	Preventability not determined	1		
Per Diem			2	1.79
	Nonpreventable	1		
	Preventable	1		
Private			83	74.11
	Nonpreventable	16		
	Preventable	65		
	Not determined	2		
Totals			112	100.01

given by Yerushalmy[4] except for the toxemia group. It will be recalled that all these latter statistics are obtained from death certificates and questionnaires, whereas the causes of death in this study were determined by a group of specialists after reviewing exhaustive studies reported by a staff of well-trained obstetricians.

One of the most common errors found on the death certificates was in the toxemia group. The general trend was to assign toxemia as the primary cause of death wherever it was present even though toxemia was not the immediate cause of death. A typical example of this is found in the patient who clearly died of adrenal insufficiency from extensive hemorrhage into both glands and not from the fulminating preeclampsia which may well have been responsible for these hemorrhages. No tabulation has been made of the total number of such errors, but it is quite likely that if we placed all deaths in which there was hypertension into the toxemia group, the incidence of toxemia deaths would probably reach proportions similar to those generally reported.

Preventability of death with fixation of responsibility for death is tabulated in Table XXII. The three cases listed as "not determinable" are the same ones in which it was not possible because of incomplete data from physicians, or inadequate postmortem examination, et cetera, to determine with any degree of certainty the primary or immediate cause of death. Moreover, in each of these the patient study was so incomplete that it would not have been unjust to have assigned at least partial physician responsibility in all three. However, excluding these uncertain cases, the Committee agreed that eighty-two deaths, or 73 per cent, were preventable and that in all but four instances the physician was wholly or partially responsible for the unfortunate outcome to the patient. We have few figures to compare with those of this table, since, for fairly obvious reasons, they are rarely published. A report from New York City for 1933 mentioned by Peckham[3] indicated that 65.8 per cent of 2,041 maternal deaths were strictly preventable and Peckham drew similar conclusions from material in rural Maryland. These percentages compare favorably with our own. However, Peckham's opinion (no statistics given) was that there was frequent patient responsibility for failure to seek prenatal care. Such instances in our series were very rare. The New York City report fixed patient responsibility in one-third of the preventable maternal deaths.

Economic status of patient is listed with preventability of death in Table XXIII. This is an attempt to determine the relative quality of medical care given patients in different economic levels. Since there are no standard criteria for evaluating the economic status of a family, the determination for this table was made on the basis of the physicians' statements or from the type of hospital admission rather than from a rooms: persons ratio. Physicians in private practice, with no charity or teaching service, sometimes contend that care of private patients differs from that given charity patients, especially on a teaching service, inferring that the former receive better care than the charity patients. Taking only the definitely assigned preventable and nonpreventable deaths in these two groups, it is seen that care given the charity and the private patient in the study did differ but that charity patients received the better care—more than two and one-half times as many deaths were determined to be preventable in the private patients than in the charity group. It should be added that the charity group of this study is not packed with teaching material but that 70 per cent of the free patients were handled in strictly nonteaching institutions.

Length of life of the mother after delivery is recorded in Table XXIV. The first twenty-four hours after delivery took the greatest toll of deaths, 31.25 per cent of the total. Excluding the twenty-three cases (20.54 per cent) which died undelivered, the average length of time elapsing between delivery and maternal death was seventeen days. The census bureau will probably eliminate the following individuals who died more than three months after delivery; small bowel obstruction 133 days after elective cesarean section for preëclampsia; actinomycotic meningitis ninety-eight days after spontaneous premature delivery; pulmonary tuberculosis ninety-two days after spontaneous term delivery; pulmonary tuberculosis and tuberculous enterocolitis 173 days after spontaneous delivery at thirty-eight weeks' gestation; and peritonitis due to bladder and bowel perforations at exploratory lap-

TABLE XXIV. DISTRIBUTION OF DEATHS OF MOTHERS BY INTERVAL BETWEEN BIRTH OF FETUS AND MATERNAL DEATH

Life After Delivery	No. of Cases	Per Cent of Cases	Per Cent Omitting Died Undelivered
Died undelivered*	23	20.54	
Died in first hour after delivery	8	7.14	8.99
Died in first day after delivery	27	24.11	30.34
Died in first week after delivery	22	19.64	24.72
Died in first month after delivery	16	14.29	17.98
Died more than one month after delivery	11	9.82	12.36
Died more than three months after delivery	5	4.46	5.62
Totals	112	100.00	100.01

*Includes two cases delivered by postmortem cesarean section.

arotomy 112 days after the onset of a septic abortion. Omitting these only for purposes of comparison with other statistical studies, we find the average period of mothers' survival after delivery to be 10.77 days which is greater than Yerushalmy's figure[4] by 1.67 days. Of those mothers succumbing within the first twenty-four hours after delivery, the average period of survival was found to be 7.27 hours with eight patients or 7 per cent of the total surviving the delivery by less than one hour. Obviously, the survival time is dependent upon the cause of death. Accordingly, all but two of thirty deaths due to shock and hemorrhage occurred in the first day after delivery (twenty-four) or died undelivered (four), while only two of the thirty in the infection group succumbed before delivery or within the first twenty-four hours after delivery.

Much more discussion should be given to the deaths due to infection and to shock and hemorrhage, for these two groups make up 53.3 per cent of all the maternal deaths in this series. There are outstanding examples of failure to recognize shock or to institute prompt therapy for it. There are also many examples of failure to replace blood loss with whole blood transfusions or even with serum or plasma infusions, too much confidence being placed in saline or glucose infusions which can never be expected to aid except for very brief or temporary periods of time. It should not be necessary to call attention to this latter fact, for hardly a medical journal today fails to have at least one article on shock or hemorrhage.

Another surprising revelation in this study is the generally inadequate therapy for puerperal infection, even in the hands of the specialist. The dosage of the sulfonamide given is usually grossly inadequate. This could be easily discovered if blood levels of the drug were obtained, but this essential to adequate chemotherapy was practically always ignored. There can be no doubt that improvement in the therapy for puerperal infection and in recognition and prompt treatment of shock and hemorrhage would materially decrease the maternal mortality rate in Minnesota.

Twenty-three patients, 20.5 per cent, died before delivery. This incidence is six times as high as reported by Yerushalmy[4] (3.5 per cent) and more than twice as high as recorded by Peckham[3] (9.09 per cent). It is significant that two-thirds of these deaths in our series were considered preventable with physician responsibility alone or in combination with the patient or the disease in all but one case. These include the following causes of death: antepartum eclampsia, intra-abdominal hemorrhage from ectopic pregnancy (two cases), cerebral hemorrhage with arteriolosclerosis, brain tumor, premature separation of the normally implanted placenta and transfusion reaction from Rh factor, peritonitis following appendectomy with an undiagnosed tubal pregnancy, hypoglycemic shock, transfusion reaction in a cardiac of at least class II, antepartum hemorrhage from placenta previa, cardiac failure (two cases), and pneumonia. The cause of death was not determinable in two cases. Among the nonpreventable deaths were two cases of acute anterior poliomyelitis. Two-thirds of the patients who died undelivered were private patients but only one-half of these were considered preventable deaths.

Legal residence for the purpose of this study was considered *urban* when the population was at least 10,000 inhabitants, since in each such city in Minnesota there is at least one well-equipped hospital where ideal obstetric practice is possible. Two patients were residents of Wisconsin and all others were residents of Minnesota. One of the former was cared for by a physician whose legal residence is Wisconsin, but he cared for the patient in a hospital in Minnesota. The legal residence of thirty-five (31.25 per cent) of the mothers was urban and of the remaining seventy-seven it was rural. During the period covered by the study 34 per cent of the births in Minnesota were to women legally resident in urban centers. Actually, however, 48 per cent of the births occurred in cities of 10,000 or more. When thirty-five deaths of urban women are related to the total number of live births to urban residents, it is found that the maternal death rate is 1.9 per thousand live births. Similarly, seventy-seven deaths of women with rural residences give a death rate of 2.1 per thousand live births. It appears, then, that place of residence does not materially affect the obstetric results. Yerushalmy,[4] in New York State exclusive of New York City, found the same puerperal fatality rates as well as stillbirth and neonatal mortality rates in residents of urban localities and rural districts.

Summary

1. From July 1, 1941, through June 30, 1942, a study was made of the maternal mortality in the State of Minnesota.

2. Due to the omission of mention of pregnancy within three months of the maternal death, the Minnesota maternal mortality rate each year is being underestimated by approximately 0.13 points.

3. There is a tendency for the maternal death rate to be above the average in the late winter and early spring and to be below this level in the fall and early winter.

4. It might be significant that 40 per cent of the mothers losing their lives in association with pregnancy and childbirth were more than 34 years old.

5. Delivery occurred in a hospital in 61 per cent of the 112 instances.

6. The small number of grand multiparae might suggest that Eastman's contention that the rate is greatly increased in the high parity bracket (9 or more) is not verified in this series.

7. With a liberal interpretation, forty-three patients (38.4 per cent) were well when first seen and died later.

8. The absence of any consultation in 56 per cent of the cases, the presence of less than 10 per cent adequate consultation, and the inadequacy of two-thirds of the consultations which were obtained raises certain obvious questions.

9. One-half of the inadequate consultations in our series were supplied by specialists, men who by training and experience should be capable of furnishing superior counsel.

10. Considering all viable fetuses, a stillborn and neonatal death rate of 38.3 per cent was obtained.

11. There was an unfortunately high incidence of operative deliveries (56.2 per cent); some of the deaths resulted directly from the operative procedure.

12. The handling of placenta previa was worse than that accorded to any other complication.

13. Twelve (15 per cent) of the operative procedures were cesarean sections; five being nonelective and done from eight to 120 hours after the onset of labor.

14. Only 8 per cent had autopsies considered adequate.

15. Failure of coroners to perform their duties and to request or demand postmortem examinations on those patients dying under circumstances suggestive of violence is outstanding.

16. Seventy-seven (82 per cent) had no pelvic mensuration or less than the minimum requirements for adequate prenatal care laid down by the Committee for the Minnesota Maternal Study.

17. The great majority of physicians' office records were of very little value as regards accurate information, if indeed there were any records.

18. According to the minimum requirements for adequate obstetrical care as adopted by this committee, adequate care was given in only 1.8 per cent in the prenatal period, 6.3 per cent in labor and for delivery, and 3.6 per cent in the postpartum period.

19. A blood Wassermann has long been considered an absolute essential—yet 73.2 per cent of these cases did not have venapuncture for Wassermann test at the first prenatal visit; and 62.5 per cent had no Wassermann test in association with the pregnancy.

20. It is fully apparent physicians and coroners signing maternal death and birth certificates gave very little thought to correctness or completeness and in five instances the death certificates were actually intentionally falsified as to cause of death.

21. All certificates signed by coroners were notoriously inferior.

22. Tables of the primary or immediate causes of death and the preventability with fixation of responsibility are given.

23. The Committee agreed that eighty-two deaths (73 per cent) were preventable and that in all but four instances the physician was wholly or partially responsible.

24. From this study it would seem that charity patients received the better care.

25. Deaths due to infection and to shock and hemorrhage make up 53.3 per cent of all the maternal deaths in this series.

26. A surprising revelation is the general inadequacy of the therapy used to combat puerperal infection.

27. It appears that place of residence (urban or rural) does not materially affect the obstetric results.

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TUBERCULOSIS AND PREGNANCY

When delivering a woman with active pulmonary tuberculosis, the severity of the illness and the extent of the lesion must receive consideration. The internist or phthisiologist must be responsible for the tuberculous condition during confinement just as he has been during pregnancy.

It seems good obstetrics to allow these women to come to term and deliver naturally. However, to induce labor ten to fourteen days early, when the condition of the patient permits, saves time when the load of pregnancy is greatest. The doctor should be liberal with analgesia during the early stages of labor and supportive treatment is necessary. The main points I wish to stress are: relieve pain, conserve energy, save blood and support the patient.—E. P. Allen, M.D.

PIONEER PHYSICIANS OF FARIBAULT COUNTY

ROSCOE C. HUNT, M.D.
Fairmont, Minnesota

(Continued from June issue.)

Daniel Straw

Daniel Straw was born in Guilford, Maine, May 17, 1847, where his early life was spent. He entered Kents Hill High School in 1861, attended Dartmouth, and graduated from the Medical School, October 29, 1869. He located at Wells, Minnesota, in 1871, where he practiced twenty years. On October 16, 1872, he married Florence Watson at Somerville, Massachusetts. There were five children: Nellie, who died in infancy; Florence, now Mrs. B. E. Jones, Bismarck, North Dakota; Frederick, Vancouver, Washington; Harry, deceased and Constance, wife of Col. L. M. Oseth, Washington, D. C.

Doctor Straw was a pioneer country doctor of the traditional type. He never refused a call, whether it was out at a shanty on the prairie in the night or in a blizzard, or whether it meant sacrificing a pleasure trip for himself. His patients said that his magnetic personality and cheery greeting were a tonic in the sickroom.

He was very fond of horses and always had a barn full of the best. He rode horseback a great deal, and kept special saddle-bred horses. His greatest enjoyment and diversion were with his horses.

The Episcopalian Church of the Nativity in Wells was built largely through his efforts. It now contains a beautiful altar as a memorial to him, with the simple inscription, "In Memory of Daniel Straw, the Beloved Physician."

He was always interested in civic affairs, was mayor a number of years, and a school board member for many terms. He was a Mason.

His death occurred at his home in Wells, July 19, 1891, from peritonitis. He was forty-four years old.[1,5,6,9]

Francis McGuire

Francis McGuire was born in Pennsylvania, April 11, 1836. His early life was spent in Ashland, Wisconsin. He graduated from Rush College, probably in 1858, certainly previous to the Civil War, as he was a surgeon for three years in the 14th Wisconsin Regiment. After the war, and probably before, he was in practice in Jefferson, Wisconsin. He located in Blue Earth City in 1877.

Like several others, he came to Blue Earth City following the death of Doctor Winch in July, 1877. Franklin, Ackerman and McGuire remained. Several others, including J. W. Andrews, left after a few weeks or months.

The *Blue Earth City Post*, August 18, 1877, shows the following notice:

"We were pleased to meet Doctor F. McGuire, of Jefferson, Wisconsin, this week, who was in town with a view to locate here. The doctor is of mature years, ripe in professional experience, having been 20 years in practice, three years of which he was surgeon of the

14th Wisconsin Regiment. After looking over the situation and advising with many citizens he has decided to cast his lot with us. He returned yesterday to Wisconsin to close up his business and will be here again in a couple of weeks."

The September 22, 1877, issue of the same paper states:

"Doctor F. McGuire, physician and surgeon, from Jefferson, Wisconsin, arrived Wednesday evening and has already hung his shingle and is ready for business. He has had over 20 years experience in his profession, three years of which was army surgeon and comes among us with the best references. We are glad to count him among our prominent residents. His office for the present will be with G. W. Buswell."

The *Blue Earth City Post* published the following, December 21, 1882:

A CARD

"Aside from being unprofitable, my age and health forbid so much riding and fatigue; therefore the following notice:

"After January 1, 1893, I shall not attend patients over 10 miles from town, unless it be in surgery, obstetrics or consultation except at following prices: One dollar for each mile over ten; thus 12 miles $7, 15 miles $10 per visit. All accounts must be fixed up within three months, or as soon thereafter as bill is presented. Hope all who read this will tell their neighbors, that none be disappointed. Subscribe for the *Post* and be Posted."

On October 3, 1884, he moved to Saint Paul with office at 199 East Seventh. In 1887 he moved to St. Cloud. He died there on December 19, 1895. He was buried in the Blue Earth cemetery, although the date of death is not given. Doctor McGuire had an excellent reputation, both as a physician and as a man.[1,7,19,22]

Albert James Franklin

Albert James Franklin was born April 3, 1852, at Leads, Columbia County, Wisconsin. He had common school education and in 1875, after his parents had become residents of Faribault County, he studied medicine with Doctor Winch. Later he attended Keokuk Medical College and graduated in 1876. His parents had come to Minnesota in 1861, locating in Verona Township. Doctor Franklin kept the farm until his death.

Doctor Franklin started practicee in Blue Earth City in the fall of 1877, a few months after the death of his preceptor, Doctor Winch. The *Post* states that Doctor Franklin bought the books and instruments of the late Doctor Winch. About a month after Doctor Winch's death Dr. A. W. Ackerman had located in Blue Earth City, and it is also of record in the same paper that Dr. J. W. Andrews had come to locate, having left Sleepy Eye. No further notice is found about Doctor Andrews; he probably remained a short time before going to Mankato.

Doctor Franklin married Lillie Nichols of Blue Earth City. There were two daughters, Hazel and Hope, and one son, Floyd. The latter has farmed in Faribault County.

Doctor Franklin was a man of great strength and physical endurance. His reputation as an obstetrician was good and he had a large obstetrical practice. He believed in dark, bad-tasting medicine and plenty of it, and was considered a successful physician. He was greatly interested in Masonry and never missed a meeting, especially if the third degree was to be given. He always took the same prominent part. Many an urgent call had to wait until Jubalum had done his final deed, and it certainly was a "knock-out."

The doctor's hobby was farming and he accumulated about his father's old homestead a thousand acres of the best land. He had so much he couldn't get it well

cultivated, but he always said he liked weed patches for the prairie chickens to nest in. He also greatly enjoyed his horses and had the best. He at one time went into racing. One of the horses was a little black mare, Panora Maid. She could pace in 2:10 and gave him enough enjoyment to compensate for the losses he took while in the racing business.

His death came in the early evening of October 9, 1911. He had returned from the farms with his favorite team, and as he was carrying oats to them, he sank down beneath their feet dead.[1,7,14,15,17,18,19]

Augustus William Ackerman

Augustus William Ackerman was born May 24, 1851, at Burnett Junction, Wisconsin. His parents lived on a farm and he attended schools in the community. He attended some medical school in Wisconsin, before going to Hahnemann Medical College and Hospital, Chicago. His diploma received from Hahnemann was dated—"Millesemo Octingentesimo LXXX, Republicæ Vero C IV."

It is of record that Doctor Ackerman started practice in Blue Earth City in 1877. The *Blue Earth City Post,* July 21, 1877, stated that Doctor Ackerman had come from Good Thunder and located in Blue Earth City. He practiced medicine there until 1887. He then discontinued medical practice and started the practice of dentistry. This he continued until shortly before his death. In preparation, he had graduated from the Chicago Dental College.

Doctor Ackerman married Lucy Anderson of one of the pioneer Anderson families who had come from New York State, May 1, 1879. He had four accomplished daughters. Three are still living, Floy, Mrs. Charles H. Freer of Portland; Hazel, Mrs. Bossard of Minneapolis, and Frac, Mrs. Reusswig, of Portland.

While there were blizzards with attendant death and loss of feet and hands in the early days, probably the greatest scourges were the epidemics of what were called black diphtheria. All the doctors told about them; every cemetery tells a silent story of their results. One of the most severe and extensive epidemics was in 1880, in Faribault County There were many deaths. The files of the *Blue Earth City Post* mention this epidemic and state that it was especially bad in Pilot Grove Township. In this connection there are verified stories of the faithfulness of Doctor Ackerman, his staying out on the prairie with the stricken families night after night until the weeks of sickness and death were past. He, like others of these pioneer doctors, was many times lost in blizzards, slept in hay stacks and later walked home after his horses had strayed home.

Doctor Ackerman was one of the finest of men, cultured and proficient. Everyone liked him, and for many years he was one of the leaders in the community. He belonged to the medical and dental societies, the Masons, Maccabees, Woodmen and the Presbyterian Church. His recreation was hunting.

He died at his home in Blue Earth, September 2, 1923.[7,12,14,17]

Mitchell Mikkelson

Mitchell Mikkelsen was born in Dane County, Wisconsin, July 27, 1850. He was the eldest of a family of six whose parents were Knute and Caroline (Erickson) Mikkelsen. He attended the schools of the community until he was fourteen years of age, when the family moved to Faribault County.

His father secured from the Government 160 acres in Section 28, Lura township.

No furrow had been turned in the rich prairie land which was later to become one of the many highly productive farms of Southern Minnesota. Mitchell went through the hardships of the early settler on the land, doing farm work along with his schooling which he got as he could from the schools thereabouts.

In 1872, when a man of twenty-two, he went to South Dakota where he homesteaded 160 acres adjoining an Indian Reservation. He had some unpleasant experiences with the Indians. He was employed by the Indian Agent as herder of the Texas cattle owned by the Agency. While at this job, he saved enough money to take up his medical studies. He first entered the office of Dr. George D. Winch of Blue Earth City, where he read medicine for about two years. He then went to the College of Physicians and Surgeons at Keokuk, Iowa, and after a few months there, graduated in 1877. Later, in 1887, he graduated from the College of Physicians and Surgeons of Chicago. He started practice in Delavan in 1878, but there is no record as to the details of the Chicago medical study. He practiced in Delavan until 1891, and then after the death of Doctor Straw he moved to Wells, where he practiced until shortly before his death in 1918, at the age of sixty-eight.

Doctor Mikkelsen was always a Republican. He was a Mason, a Woodman, and surgeon for the Chicago, Milwaukee, and St. Paul Railway.

October 22, 1879, he married Ella Hefron, who was born in Columbia, Wisconsin. She died at her home in Delavan in 1890. One son, Willie B., was born November 26, 1882. The doctor was again married to Mary Perizo de Runo and there was one child, L. M., born in Wells, April 2, 1894,[1,4,6,19,31]

Archer Clifton Jacobs

Archer Clifton Jacobs was born August 24, 1852, in New York State. His family moved to Blue Earth County, Minnesota, when he was a boy, and he went to country school there. He was first educated for teaching and did teach school for several years but decided to take up medicine at Minnesota College Hospital where he graduated. He located in Elmore in April, 1886, and continuously practiced there for fifty-three years.

Doctor Jacobs came to Elmore soon after the railroad got there, and it was a raw railroad town. Many dwellings were covered with tar paper and consisted of only one room. South and West the land was unbroken prairie. In his early years before any roads had been made, he rode horseback. Early settlers still remember his famous horse Black Betsy. She was a beautiful animal with almost human intelligence, and, like Dr. McClure's Jess, carried him through storm and flood. Later he purchased horses from a breeder in Vernon Center. They were a wonderful strain of rather large horses with great intelligence. Doctor Jacobs was a very small man with a high-pitched voice and presented a rather incongruous appearance with these fine horses hitched to his Lindeman buggy.

As a citizen he was a man of very high principles and practiced them in his social and professional life. He was a prominent member and supporter of the Methodist church where he taught a Sunday School class for over forty years. He was much interested in Masonry and held many offices, but his medical practice always came first.

On October 24, 1885, he married Frances Kinney, who survives.

For some years before his death he avoided night calls except when his associate was on vacation but practiced up to six months before his death on June 28, 1939.[17,20]

(To be continued in the August issue.)

President's Letter

The AMA Council on Medical Services and Public Relations

The meeting of the American Medical Association, held in Chicago, June 12 to 15, was very successful. The attendance was large and the scientific program was of the usual high standard.

Many of the important points made in the report of the new Council on Medical Service and Public Relations were discussed at a meeting held the day before the regular sessions. Representatives of nearly all the states were present. Members from each area were called upon to express their opinions regarding Council activities, as presented by the chairman, Dr. L. H. Bauer, of New York.

The general sentiment was in favor of the work so far carried on. The delegates were particularly interested in what Dr. Joseph Lawrence, formerly in charge of public relations for the New York State Medical Association, had to say about conditions in Washington.

The recommendations of the Council were accepted by the House of Delegates and the Board of Trustees. Dr. Lawrence will continue his work in Washington on a full-time basis, and he will have the assistance of an attorney in accordance with the recommendations. The Council also recommended that more aid be provided to county and state societies interested in establishing prepayment plans for medical service. A new man will be added to the Council staff for that purpose.

The whole report showed clearly that the Council has been very active. Members have given of their time and energy entirely for the good of American medicine.

Inasmuch as Dr. Louis H. Bauer was elected, at this session, to the Board of Trustees of the American Medical Association, Dr. Thomas A. McGoldrick of New York was chosen to take his place on the Council.

It is of great interest to note that the other five members of the Council were re-elected. We are all pleased to have Dr. A. W. Adson of Rochester again representing this section.

It is very gratifying to follow the dignified, constructive course the Council has followed since its creation a year ago, and the doctors of Minnesota can be justly proud to have had a guiding hand in its development.

E. Friendelsohn Jones

President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

NO MEDICAL GRADUATES AFTER FOUR AND A HALF YEARS

If the recent action of the Selective Service System in not exempting the present premedical students from the draft is continued, what will be the result?

In the first place there will be no interns and residents in four and a half years and thereafter until students are again allowed to enter the premedical course. This will be a catastrophy for the hospitals which are absolutely dependent on recent graduates in medicine if they are to give proper care to patients.

The medical schools will have no students and will be terribly disorganized in their premedical and medical instruction as long as the lack of students continues. With no students, there will be no need of a faculty.

The exemption of premedical students involves about 6,000 young men in each class, and the total manpower involved should not exceed (we hope) two or three times this number.

Although more doctors will have been turned out during these war years than normal, there will be more need for doctors during war and postwar years.

If Selective Service does not wish to have premedical students on the inactive list, reversion can be made to prewar methods with the medical schools making the selection.

Whatever solution is made of this very serious problem, we are strongly convinced that for the good of the future health of the nation, the constant flow of new medical graduates, if necessary in restricted numbers, is essential.

SHORTAGE OF HOSPITAL BEDS

The shortage of hospital beds in the Twin Cities is most acute. What the situation is in the rest of the state we are not in a position to know. We have reason to believe, however, that the shortage is rather general.

A few years ago many hospitals were "in the red" and had been for a number of years. Some were considering closing their doors, and, of course, some did.

There are a number of reasons for the change in the occupancy of the private hospitals. As a result of higher income in most population groups, people are better able to pay for hospital service. Further, widespread hospital insurance enables many who would otherwise be forced to accept free hospital accommodations to patronize pay hospitals. Doubtless, the institution of part-pay at some of the tax-supported hospitals has led many to prefer private physician and hospital. Possibly more elective surgery is being done at present. Possibly, too, the busy practitioner is more likely to send his patients to a hospital in order to minimize the number of house calls. How much the possession of hospital insurance is abused is hard to say.

The inability to obtain a hospital bed in case of an acute illness requiring hospital care is a serious situation. While the hospitals have been filled in winter months in recent years, there have been vacancies during the summer months. Now, in certain localities at least and probably quite generally, the hospitals are filled even in the ordinarily light summer months.

What solution is there for the congested condition in the private hospitals? Economic conditions after the war will doubtless result in some diminution in the number of citizens able to pay hospital bills, and the tax-supported hospitals, instead of being only partly filled, as at present, will be patronized to a greater extent. New hospital construction is out of the question for the duration. The facilities of the lightly-patronized public hospitals are scarcely suited for conversion to private units, although this may be a possibility in isolated instances.

The only solution of the present acute congestion would seem to be the coöperation on the part of the medical profession in caring for patients, who do not actually require hospital care, in their homes so that the acutely sick may be accommodated. The coöperation of the public is just as essential.

MARRIAGES AND BIRTHS DURING THE WAR

WE have all been conscious of the increase in marriages in recent years, especially in the youthful group. That there has been a marked increase in marriages in all age groups is perhaps not so well appreciated.

An analysis of the figures in New York State,* which probably hold more or less for the entire country, shows that marriages increased in frequency in 1940 over 1939, about 23 per cent in the age group below twenty; 29 per cent in the age group twenty to thirty-four; and 18 per cent in the age group thirty-five and over. These increases in 1940 about doubled in 1941 in all the age groups combined and tripled in the groups under twenty and over thirty-five in 1942.

The decrease in marriages in the age group from twenty to thirty-four in 1942, compared with 1941, is accounted for by the fact that the youths in this group had largely left the state of New York by that year. In 1943, there was a general falling off in the marriage rate which will probably continue this year.

It is interesting to note that England has apparently been similarly affected by the war.† Marriages increased by over 100,000 in 1942 compared with 1938, although they fell some 66,000 in 1943 below the 1938 level. As a result, the live births in 1942 and 1943 continued to show a marked increase over prewar levels. The birth rate in 1943 was the highest in England and Wales in eighteen years. The disappearance of unemployment and war allowances for wife and children are credited with this showing.

Thus has the destruction of the lives of citizens of the United States, England, and Wales been compensated to some degree at least as a result of economic and doubtless emotional factors resulting from the war.

*Wartime Changes in Age at Marriage, Statistical Bulletin, Metropolitan Life Insurance Company, May, 1944.
†Foreign Letters: London. Jour. Am. Med. Assn., 125:507, (June 17) 1944.

AMERICAN BUREAU FOR MEDICAL AID TO CHINA

IN 1937, a group of Chinese doctors and merchants in America established the American Bureau for Medical Aid to China for the purpose of sending medical supplies to China. The organization has since been joined by Americans interested in China and sympathetic to its plight. It operates through agencies of the Chinese Government and the National Red Cross of China in coöperating in the sphere of private and public health and now receives its financial support as an agency of the United China Relief, which in turn is supported by the National War Fund.*

China as a result of six years of invasion has suffered from a dearth of doctors, nurses, and medical supplies for its army and civilian population. This bureau has been interested particularly in furnishing funds and supplies in the form of drugs, vaccines, hospital equipment and the like, for the Chinese Army Medical Administration, the National Health Administration, and the four National Medical Colleges. With 60,000,000 homeless civilians driven from occupied territory, the public health need is inconceivable. In addition to medical supplies, eighty-four scientific journals are microfilmed regularly and fourteen copies sent to China. From a small beginning in 1937, last year the bureau distributed about $2,000,000 in funds and supplies, supplementing assistance rendered by the American Red Cross and the Lend Lease Administration.

*The bureau makes no direct appeals for financial support, having become, in 1941, one of the agencies participating in United China Relief. Direct contributions to the Bureau at 1790 Broadway, New York 19, N. Y., while welcome, are counted as part of the total funds raised by United China Relief. Local Community and War Relief Chests would be credited with any direct contributions from localities where these chests exist.

THE DR. WILLIAM BEAUMONT MEDICAL FOUNDATION, INC.

THE historic experiments of Doctor Beaumont on Alexis St. Martin are usually associated in the minds of medical men with Mackinac Island. That many of these first experiments were performed at Prairie du Chien, Wisconsin, is not generally known.

It was in June, 1822, at Mackinac Island, that the shotgun accident occurred to the French Canadian, Alexis St. Martin. Under the care of Dr. William Beaumont, an army surgeon, the injured man recovered, a stomach fistula remaining. St. Martin was supported and treated by Doctor Beaumont in his home for nearly two years. In May, 1825, he began making his famous experiments with human digestion. In August, 1825, however, St. Martin ran away to Canada, and it was not until 1829, after Beaumont had been transferred to Ft. Crawford at Prairie du Chien, that the doctor learned of his whereabouts and induced him to bring his family to Prairie du Chien, to again enter his employ. Between

December, 1829, and March, 1831, about fifty-six experiments were recorded. In 1832, the doctor and patient moved to Washington, D. C., where 116 further experiments were conducted, followed by the publication, in 1833, of Doctor Beaumant's book entitled "Experiments and Observations on the Gastric Juice and the Physiology of Digestion."

Dr. William Beaumont was born in Lebanon, Connecticut, in 1785. He suffered from defective hearing, the result of an accident in childhood, which became progressively worse. He studied medicine at St. Albans under Dr. Benjamin Chandler and received his license from Vermont in 1812, in time to enlist and serve in the War of 1812. Doctor Beaumont maintained a private practice in Plattsburgh from 1816 to 1820. In 1820, he reënlisted and was sent to Machilimacinac Island (now Mackinac Island) in the strait between Lake Huron and Lake Michigan. In 1828, he was assigned to Prairie du Chien, where a number of experiments on Alexis St. Martin were performed. It was Doctor Beaumont's ambition to take St. Martin with him to Europe in order to demonstrate his experiments to surgeons and scientists such as the great Swedish chemist, Berzelius. A leave of six months granted him in 1832 he considered insufficient and so never made the trip. After publishing his book, he was transferred to Saint Louis in 1834, resigned from the service in 1839, and enjoyed apparently a prosperous surgical practice in that city until his death in 1853. His was a valuable contribution to human physiology.

The experiments conducted at Prairie du Chien took place at the first Fort Crawford, the foundations of which were only recently uncovered during the construction of a municipal swimming pool in the grounds of Villa Louis, the restored residence of Hercules Louis Dousman, built in 1843, and now a public park. Incidentally, the old residence, now over 100 years old, is a fine example in construction and furnishings of a fine residence of that period when Chicago was no more than a village. For several years the spring opening of the Villa to visitors has been the occasion of appropriate ceremonies, including parade, horse show, and pageant in memory of the early days.

The second Fort Crawford, built on higher ground at Prairie du Chien, was destroyed by fire except for one wing. In 1943, the Dr. William Beaumont Medical Foundation, Inc., was founded, acquired title to the ruins of the fort, and is reconstructing it for use as a museum devoted to the memory of Doctor Beaumont and his work. A bronze tablet placed at this site in 1931 by the State Medical Society of Wisconsin, commemorates Doctor Beaumont's pioneer work. The undertaking has been endorsed by the Councilors of the State Medical Society of Wisconsin and by the local Crawford County Medical Society. The Foundation is adding to the $1,500 already raised for completing the restoration of the building and the preparation of exhibits. It is a unique and fascinating project which will appeal to medical men and historically-minded individuals. Those interested in making contributions may address M. J. Dyrud, 508 South Beaumont Road, Prairie du Chien, Wisconsin.

INFANTILE PARALYSIS GRANTS

Announcement was made at the May meeting of the National Foundation for Infantile Paralysis of grants totaling $1,128,770 for intensifying and broadening its work in poliomyelitis.

A grant of $320,000, which will cover a five-year period, was made to the University of Minnesota Medical School for expansion of the project already inaugurated there by the Foundation in the study of physiological problems and clinical application of physical medicine in connection with poliomyelitis.

Another long-term grant of $325,000 was made to the University of Michigan School of Public Health at Ann Arbor, to finance and operate an expanded virus study unit. Emphasis is to be laid on discovering, if possible, a practical and inexpensive method of identifying the polio virus, and provision will be made for the training of virologists.

Another grant of $175,000 was made to the Northwestern University Medical School to expand the Kenny Training Center already established there and the activities of the Department of Physical Medicine of the Medical School.

The remaining grants have been designated to organizations throughout the country active in virus research treatment and education in connection with poliomyelitis.

The discoveries of healing science must be the inheritance of all. That is clear. Disease must be attacked whether it occurs in the poorest or the richest man or woman, simply on the ground that it is the enemy; and it must be attacked just in the same way as the fire brigade will give its full assistance to the humble cottage as readily as it will give it to the most important mansion.—Winston Churchill, *Lancet*, Mar. 11, 1944.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

CONGRATULATIONS TO THE LEAGUE OF WOMEN VOTERS

It is encouraging to note that the League of Women Voters, while interesting itself in all current proposals for improving the health of the people, has decided to throw its influence in Minnesota, not for compulsory sickness insurance, but for extension of public health districts throughout the state.

Public health activity, in the sense of protecting water and food supplies, controlling sanitation and preventing the spread of communicable disease, is definitely a proper concern of government.

Tax-supported departments of public health have made immeasurable contributions to the health of the American people, in spite of the fact that they have been meagerly financed and their activities hampered by official neglect and indifference.

As noted repeatedly in these columns, the logical place for government to start an all-out effort to improve the public health is with the greatly-needed expansion of the work of the organized public health department. The House of Delegates of the American Medical Association went on record in 1942 in favor of such expansion and urged the Trustees "to use all appropriate resources and influences of the association to the end that, at the earliest possible date, complete coverage of the nation's area and population by local, county, district or regional full-time health services be achieved."

At the present time, less than half of the people of the United States live in districts where there is adequate public health protection, directed by trained medical officers of public health. What is lacking is not the knowledge nor the necessary skills, but the support and interest of all units of government, local, state and national, in this fundamental need.

In Minnesota there are only four organized health districts outside the large cities; and the League can be of the greatest assistance to physicians and other public-spirited citizens who wish to foster sound progress in public health, if they will work vigorously to increase the number of these districts in the state after the war.

ONE YEAR OF SICKNESS BENEFITS IN RHODE ISLAND

Compulsory insurance providing cash disability benefits for wage earners is now one year old in Rhode Island. This is the first program of its kind anywhere in the United States; and it is to be followed, if the governor of the state has his way, by the first compulsory state hospital insurance plan.

As noted before in these columns, the cash benefit plan was initiated chiefly, because there was a large, unused reserve in the state unemployment compensation fund. Unlike most states, Rhode Island's plan called for a small employe-contribution to this fund. Instead of cancelling this contribution, it was decided to use it for cash benefits during employe illness or disability.

To the medical profession was given the responsibility for certifying the employe's eligibility to draw benefits; and after one year's operation, it is clear that the difficulties foreseen by the physicians have been realized. At the same time, the plan appears to have worked reasonably well, as judged by the fact that there has been a comfortable growth in the reserve fund although 26,500 claims have been filed of which 3,800 were disallowed. How it will work when the war is over and the employment picture changes, remains to be seen.

Medical Board Established

During the first few months of operation, the responsibility for certification was left entirely in the hands of the patients' own physicians without any check by an examining staff of the Unemployment Compensation Board in charge of the plan. Soon such a check was deemed necessary and now there is a medical board which may, if it wishes, check on a case directly after certification by the physician, or may wait to check until after a period of drawing benefits and before further payments are made.

The physicians naturally resented establishment of the board; but they have found, as it was found long ago in European countries, that determination of physical eligibility is a difficult problem, especially when complaints are largely subjective. When confronted with a patient who declares he feels unable to work, though the doctor thinks he can, the doctor may often have to make the choice between signing the claim or losing the patient to some other doctor who will sign the claim.

Certification may be made, under the law, by any licensed practitioner, furthermore, whether or not he is a doctor of medicine. Difficulties arise from that fact and from the paper work involved, which is considerable.

The board has expressed criticism of the practicing physicians in some cases but appears to feel that difficulties stem from unconscious rather than from conscious bad faith.

Weekly benefit checks average about $17 and may be paid for a total of 20 weeks in any calendar year. Inasmuch as Rhode Island is a highly industrial state, it is estimated that over 90 per cent of all gainfully-employed workers participate in the program.

Hospital Care to Come

The plan for compulsory hospital insurance was proposed by Gov. J. Howard McGrath because, in his opinion, cash disability benefits meet only part of the problem of illness and because a satisfactory state program would eliminate the dangers of a federal program in the hospital field. The governor's plan provides that the insurance should be carried by private carriers, the suggested law making it mandatory that employes be covered by contracts offering stipulated minimum benefits and that the hospitals be paid direct for their services. Such contracts could be made either with the Blue Cross or private insurance companies. Details of this plan remain to be worked out and the bill is not expected to be ready for submission to the legislature until 1945. Gov. McGrath is said to be considering extension to cover medical and surgical services, too; but that development would hinge, apparently, upon the success of compulsory hospital insurance.

BRITISH DOCTORS AND THE WHITE PAPER

The published reaction of the British Medical Association to long-range plans of the Churchill government for a state salaried medical system in Britain might well have come from American doctors with reference to the Wagner-Murray-Dingell Bill.

The British association is fighting state-hired medical service while their American colleagues are fighting compulsory government health insurance; but their policies and even their phraseology in opposition have much in common.

For instance, the Council of the British association would like to have a central administrative body dealing exclusively with civilian health and medical functions of the central government, according to a report printed in a recent issue of the London *Daily Mail*. British doctors want this body to be headed by a Minister who will be responsible to Parliament. American doctors also want a department of health, headed by a cabinet member in our own government.

They Fear Bureaucracy

The British Medical Association also fears political influence in medical matters and dislikes bureaucracy and the "departmental mind" in the care of the sick.

Government health insurance has existed for many years in England, of course; but the reorganization planned by the Government after the war is apparently as disturbing to British doctors as the possibility of government health insurance is to medical men in the United States.

Nine Points

Following are nine points drawn up by the British Council of which the King's physician, Lord Dawson of Penn, is a member, as they were summarized and published in the *Daily Mail*.

1. Doctors, as members of an expert profes-

sion, should not be subjected to nonexpert direction by Civil Servants.

2. They object to the profession being controlled by the Treasury or the "Treasury Outlook."

3. They oppose "civil direction" in peacetime; they do not want a doctor to be told by a Civil Servant where to practice.

4. The "White Paper" (Government outline of postwar health plans for Britain) called for a "high degree of certification." This, they say, might mean that a doctor, convinced that a patient needed a week off from work, would not dare to give a certificate because he might be questioned by a Government inspector.

5. The Government plan, in practice, would destroy the doctor's professional freedom and the doctor-patient relationship.

6. They oppose any attempt to introduce, insidiously, by means of health centers, the idea of a state-salaried service, because it would substitute for the present loyalty to patients, a loyalty to the state.

7. The "health areas" into which the country is to be divided are too small and will multiply, instead of reducing "the departmental mind."

8. Health centers should be built slowly and be the fruit of accrued experience and not limited, as proposed, to surgery.

9. The White Paper makes no provision for training in, or practice, of preventive medicine.

"Doctors Will Resist . . ."

"The profession," says the association, "is not prepared to see itself converted into a branch of central or local government or to become a 'collectivized unit' within a free economy.

"Doctors will resist any control by the State, either political or administrative, which is inconsistent with their intellectual and professional freedom."

They Know the Departmental Mind

It should be recalled that British doctors have already had considerable experience with what they term, "the departmental mind" since they are obliged to conform to departmental regulations in many phases of insurance practice where Civil Servants hold the purse strings.

The American doctor, on the other hand, is still free to practice without any restrictions except those imposed by licensure and the ability of the patient to pay. This last can be and is, with great regularity, surmounted by individual arrangements for long-term credit or by philanthropy, as the occasion demands.

BACKGROUND IN BRITAIN

Strangely enough, the radical British White Paper, issued in February this year, is the product of health planning by a conservative government.

The chain of events leading up to it runs back many years to the National Health Insurance Act which became effective in 1912. This act was limited in scope, providing only care from a general practitioner and not including either specialist or hospital service. It was open only to employed persons below a certain income and not to members of their families. The British Medical Association opposed the Health Insurance Law of 1912; but by 1930 it was recommending extension of the act to include specialists' services and to cover families of insured persons. It was generally recognized by that time that there was need for more fully available hospital service and for correlation with school medical services and public health; but the depression halted any major expansions for a number of years.

Planners Have Their Say

The war, however, has brought changes to the hospital system and stimulated both professional and lay bodies to plan for future health services. Since 1941 many leading professional bodies and several important nonmedical ones have issued reports on postwar plans. The report of the Medical Planning Commission of the British Medical Society, calling for encouragement of group practice and the expansion of insurance coverage to approximately 90 per cent of the population, appeared in June, 1943. In November came the Beveridge Report, presented by Sir William Beveridge at the official request of the Government. The Beveridge report dealt with the entire field of social sceurity but included plans for a comprehensive health service. An organization of young physicians presented a report shortly afterwards, following, in the main, the Beveridge principles. The Society of Medical Officers of Health recommended a universally available state-salaried medical service. The British Labour Party and the Socialist Medical

Association took the same ground. On March 21, 1943, Winston Churchill declared in a world-wide broadcast: "We must establish, on a broad and solid foundation, a National Health Service." The Government conferred with many bodies including the British Medical Association and the White Paper contains the statement of its proposals.

Dominions' Plan, Too

It should be noted, at the same time, that Canada, Australia and South Africa are all reported engaged in working out similar plans for expanded national health schemes, either on the insurance or the state-salaried basis.

New Zealand made certain health benefits available to all citizens in its Social Security Act of 1938. Maternity benefits went into operation in May, 1939, hospitalization in July of the same year and general practitioner service in 1941. The New Zealand plan has run into difficulties partly because of opposition of the medical association and partly because of a severe shortage of doctors. Experience, there, is generally reported by both doctors and laymen as highly unsatisfactory.

U. S. Alone

The United States, alone, among the great nations of the world, still retains in toto its system of private practice for all ordinary medical services. The system is now undergoing its first serious legislative threat with the introducion in this Congress of the Wagner-Murray-Dingell Bill. Physicians are almost unanimously opposed to this bill; but it seems clear that they, themselves, must now formulate and push action on an effective country-wide health policy if they wish to save the private practice of medicine in the United States.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. DuBois, M.D., Secretary

License of Minneapolis Physician Suspended for Five Years for Drug Addiction

In the Matter of the Revocation of the License of Donald Laing Peterson, M.D.

The Minnesota State Board of Medical Examiners on May 12, 1944, suspended for five years, the medical license held by Dr. Donald Laing Peterson, 2901 4th St. S. E., Minneapolis. Dr. Peterson was cited by the Medical Board following his plea of guilty on March 8, 1944, in the United States District Court at Minneapolis to an indictment charging him with violating the Harrison Antinarcotic Law on two counts. On March 25, 1944, Dr. Peterson was ordered by Judge Gunnar H. Nordbye to place himself in the United States Public Health Service Hospital at Lexington, Kentucky, for treatment for drug addiction.

Dr. Peterson was born at Casselton, North Dakota, in 1908, and received his Doctor of Medicine degree from the University of Minnesota in June, 1933. Prior to practicing in Minneapolis, Dr. Peterson was located at Fargo, North Dakota.

Minneapolis Physician Loses Basic Science Certificate and Medical License

In the Matter of the Revocation of the License of Orel A. Kibbe, M.D.

On May 12, 1944, the Minnesota State Board of Medical Examiners formally cancelled the license to practice medicine held by Dr. Orel A. Kibbe, 4316 Upton Ave. So., Minneapolis. Dr. Kibbe, 63 years of age, had previously entered a plea of guilty in the District Court of Hennepin County to the crime of abortion. Dr. Kibbe's basic science certificate was cancelled by the Minnesota State Board of Examiners in the Basic Sciences on April 4, 1944, for the same reason.

PREVENTABLE DISEASES STILL UNCONTROLLED

As a nation we still permit smallpox, diphtheria, whooping cough, tetanus, typhoid, tuberculosis, rheumatic fever, and dozens of other preventable diseases to take their annual toll. To be sure, we have made great progress in bringing them under better control in recent years, but let no one think for a single moment, that these killers of mankind are incapable of returning to the scene of their previous triumphs should we relax temporarily in our efforts to keep them in check.—Earl E. Kleinschmidt, M.D., *Ohio State Medical Journal*, March, 1944.

Minneapolis Surgical Society

Meeting of January 6, 1944

Vice President Daniel MacDonald, M.D., in the Chair
Secretary, John M. Feeney, M.D.

TUMOR OF THE BREAST

MARTIN NORDLAND, M.D., F.A.C.S.
Minneapolis, Minnesota

This case report is concerned with a tumor of the breast in a single woman nineteen years of age. She had noticed a hard lump in the left breast for about a year. In recent months the mass had become rapidly larger and was quite tender. She had noticed that the mass was well defined.

The patient's past history was irrelevant. She had always been in good health. There was no history of trauma. Examination revealed a healthy young woman with good color. Both breasts were of average size. In the left breast in the lower half was a large mass, well defined, which involved about one-third of the breast, extending well up to the nipple. The mass described was removed. The pathological report was as follows:

Macroscopic Specimen: Tumor of the breast encapsulated and about the size of a goose egg. When the capsule is cut the contents show it to be lobulated, papillomatous masses, whitish to pale pink with a large number of them so that the cut tumor forms a mass 9 cm. across and 7 cm. through.

Microscopic Specimen: The tissue shows a fibrous mass containing glands.

Diagnosis: Papillary fibro-adenoma, benign.

The unusual condition about this case was the fact of the presence of this large tumor in a very young patient. The problem consisted of preserving the breast. She had been advised to have the entire breast removed. It was possible to remove this mass without disfiguring the breast.

Numerous cases have presented themselves from which breast tumors have been removed leaving unsightly scars and marked deformities of the breast. I believe that many times enough caution is not exercised in surgery of the simple, nonmalignant tumors of the breast. The psychological factor should be taken into consideration, particularly in these young individuals. The pathologic report of this tumor reveals it had an unusual appearance and the microscopic picture revealed unusual morphological tissue.

Discussion

DR. MCCARTNEY: These are like any other benign tumor. If they are not completely removed, they will recur. When you do find a fibro-adenoma developing after one has been removed, it does not mean that it recurred because it is malignant. Sometimes large numbers of fibro-adenomas arise in the same breast.

CARCINOMA OF BOTH BREASTS

Report of Three Cases

G. R. DUNN, M.D.
Minneapolis, Minnesota

Following the operative removal of one breast for carcinoma, a malignant growth occasionally develops in the other breast. Whether the growth in the second breast is a primary new growth or is metastatic in origin, can rarely be determined with accuracy. If, however, the following criteria are met, the evidence very strongly suggests that the second growth is a primary carcinoma:

1. The diagnosis of carcinoma must be confirmed by microscopic examination of each growth.

2. An interval of five years should elapse between the operative procedures.

3. The carcinoma found in one breast should be of a different type than the carcinoma of the second breast.

4. There should be no evidence of metastatic carcinoma elsewhere in the body.

Obviously, on occasions, a primary growth may develop in the second breast at a comparatively short period of time following the first operative procedure and two primary growths may be of the same type.

Case 1.—An unmarried woman, forty years of age, was examined November 11, 1939. A radical operation (Halsted) had been performed at the Midway Hospital by Dr. King on October 10, 1934, and the microscopical diagnosis was medullary carcinoma of the left breast with metastasis to the axillary glands. There was no evidence of recurrence at the time of our examination five years after operation. Examination of the right breast disclosed a poorly defined, small mass in the upper inner quadrant of the right breast. On manipulation of the breast, definite retraction of the skin occurred over the mass. There was no enlargement of the axillary glands. X-ray of the chest was reported normal. On December 9, 1939, a Halsted operation was performed for carcinoma of the right breast. Frozen and paraffin sections showed scirrhus carcinoma of the right breast without involvement of the axillary glands. Even in this case the pathologists considered the possibility of metastasis for they felt that the right breast showed two separate areas of malignancy. The carcinomata occurring in the right and left breasts were of

different types as shown on miscroscopic examination. An interval of over five years intervened between the two operative procedures and when last examined, December 30, 1943, the patient exhibited no signs of recurrence—over nine years after the first operative procedure and over four years after the second operation.

Case 2.—An unmarried woman, forty-three years of age, exhibited a firm, irregular mass in the upper portion of the left breast. Definite retraction of the skin occurred over this mass on manipulating the breast. No axillary glands were palpable. On March 25, 1939, a Halsted operation for carcinoma of the left breast was performed. The microscopic diagnosis was scirrhus carcinoma without axillary metastasis. A series of x-ray treatments was given postoperatively.

A little over two years later, on April 28, 1941, a small mass in the breast tissue was noticed about two inches above the right nipple. Retraction of the skin occurred over the small mass on manipulating the breast. There were no other palpable masses in the right breast. A supraclavicular node was palpable on the left. X-ray of the chest was reported normal. On April 29, 1941, a Halsted operation for carcinoma of the right breast was performed. The microscopic diagnosis was scirrhus carcinoma of the right breast without metastasis to the axillary glands.

The enlarged supraclavicular gland was removed on the left side. This showed metastatic carcinoma. A series of x-ray treatments followed. Today the patient has generalized metastases.

Clinically, the tumor of the right breast appeared to be primary. The growth was small and there was only one area of carcinoma in the right breast. However, the interval of time between the two operations was only a little over two years; the growths were of the same variety, the original growth in the left breast had metastasized to a supraclavicular gland and the patient now has generalized metastases. The carcinoma of the right breast may have been a metastatic growth.

Case 3.—A woman sixty-nine years of age was examined on July 9, 1940. There was a poorly defined lump in the left breast but definite retraction of the skin was evident over the mass on manipulation of the breast. On July 12, 1940, a Halsted operation was performed for carcinoma of the left breast. Pathologic examination showed scirrhus carcinoma of the left breast without involvement of the axillary nodes. The patient did not wish x-ray treatments. The patient was examined at frequent intervals and on July 14, 1941, on manipulating the right breast a very slight but constant dimpling of the skin was noticed to occur about one inch to the right of the nipple. There was no palpable mass with the patient in the sitting or in the prone position. X-rays of the chest were reported negative. No metastasis could be found elsewhere. On July 18, 1941, a Halsted operation for carcinoma of the right breast was done. The pathological report was as follows: Grossly the breast shows a small scirrhous carcinoma about 5 mm. in diameter; four lymph nodes from the axillary nodes show no gross involvement. Microscopical examination shows scirrhous carcinoma of the breast; no involvement of the lymph nodes. The patient died November 5, 1943, of internal metastasis. There was no local recurrence in either operative field. These tumors were of the same variety. The tumor of the right breast became evident a year after the first but no recurrence was manifest in either operative field. The carcinoma of the right breast may have been metastatic in origin.

Carcinomata of both breasts, whether primary or metastatic, seem to occur with some frequency, and inasmuch as these patients are usually having periodic examinations, we have an excellent opportunity for early diagnosis. This is demonstrated in Case 3 of this series where one was able to make the diagnosis of carcinoma of the right breast before a palpable mass was present.

Unfortunately, the mortality is high. One would expect approximately a 100 per cent mortality in the cases in which the second breast is involved by metastasis and a high mortality in the cases in which a primary lesion develops in the second breast.

Discussion

Dr. McCartney: This question of whether we have to do with multiple carcinomas or metastasis is something that confronts us every now and then. I have seen several instances of bilateral carcinoma of the breast and the question of whether there was a new primary tumor or metastasis always came up. We know that in other parts of the body a number of primary tumors may occur and we have what appear to be primary, independent malignancies, and we do not even consider the possibility that one is primary and the others metastases; we consider them all primary tumors.

I saw several years ago five different areas in a breast, any one of which made an acceptable primary tumor. Whether one was primary and the others lymphatic permeations through the breast, or whether there were four or five different primaries developing at the same time, we cannot tell. Looking at each one individually it made a primary carcinoma of the breast. Bilateral cancers occur in about 8 per cent of the instances, but it is not clear whether they are primary in the first breast and the other represents a metastasis. If one had tumors which definitely differed, you might be willing to say that this is a new tumor and not a metastasis from the one which had been removed. But that is not entirely safe. I recall an instance where in one and the same section there was scirrhous, medullary and gelatinous tumor. The chances of getting different types of tumor in the same breast is not great. Scirrhous tumors make up 90 per cent of the cases, leaving about 10 per cent for medullary and the ones we call adeno- or gelatinous carcinomas.

The time interval is again not a sure method of differentiation. To say that a given length of time is a dividing point between metastasis and a second primary is hardly a safe criterion, but we feel that when a number of years has elapsed between the two tumors in the breast, we are dealing in all probability with an independent second or new tumor and not a metastasis from the original tumor.

Dr. R. C. Webb.—Primary carcinoma of both breasts is not a particularly rare condition, but such case reports are interesting, and they may serve as an additional argument for the radical and complete operation as emphasized by Dr. Dunn. From time to time during recent years we have heard surgeons advocating simple mastectomy in many cases of carcinoma of the breast because of the poor results from the more radical surgery. We also occasionally see surgeons performing a semiradical or incomplete operation, and we are led to wonder if the pessimistic attitudes of advocates of simple mastectomy are the cause of these incomplete procedures.

It was just fifty years ago, in 1894, that Dr. Halsted wrote several papers on carcinoma of the breast advocating the complete radical operative procedure for removal of the cancerous breast. His arguments are still good, and they can be profitably re-read by those interested in this type of surgery.

In order to introduce a more cheerful note in this argument I would like to add two brief reports of patients who have had primary carcinoma of both breasts. One of these patients has survived her second operation sixteen years and the other developed her second

breast carcinoma sixteen years after her first breast carcinoma.

Case 1.—A woman fifty-three years of age was referred to me in July, 1926, by Dr. T. A. Peppard. She complained of a lump in the left breast of one week's duration. The tumor was located in the lower outer quadrant of the breast and it felt about the size of a small walnut. It was freely movable on the underlying tissues, but there was dimpling of the skin.

On July 3, 1926, she was operated upon at the Asbury Hospital, and a radical complete operation was performed on the left breast, removing the breast and both pectoral muscles and the axillary contents.

The tissues were examined at that time by Dr. Floyd Grave, and they have recently been reëxamined. The report is as follows:

"July 3, 1926—The tumor mass removed from the lower outer quadrant of the left breast measures about 1.5 centimeters in diameter. The outline is indefinite. Fibrous rays extend from the tumor mass into the surrounding breast tissue. Cut surface shows linear markings and whitish chalk-like dotted surface.

"Section shows the tumor to be made up of rather large epithelial cells which are diffusely scattered. There are some large irregular shaped nests and some linear cords. Some of the smaller ducts are also filled with epithelial cells. The fibrous tissue in the breasts is increased. It has caused atrophy of some of the tumor cells. There was no evidence of axillary metastasis. Diagnosis: Scirrhous carcinoma."

In January, 1928, sixteen years ago and one and one-half years after her operation on the left breast she returned at the age of fifty-five years with a tumor in the lower half of the right breast just lateral to the midline. The tumor was about the size of a hazelnut.

On January 31, 1928, she was operated upon at the Asbury Hospital, and a similar complete radical operation was performed on the right breast.

The tissues were examined by Dr. Floyd Grave at that time, and they have recently been reëxamined also. The report is as follows:

"January 31, 1928—A small tumor about one centimeter in diameter was removed from the right breast in the midline just below the nipple. It is a solid tumor, the surface of which retracts when cut. It shows whitish linear markings.

"Section shows a marked fibrous tissue reaction which encloses numerous small nests of epithelial cells, and there are small cords of similar type cells. The cells are very irregular in size and shape and stain irregularly. The mitotic figures are present.

"Diagnosis: Scirrhus carcinoma."

She is now seventy-one years of age and annual examinations have shown no sign of recurrence.

The fact that this patient has lived sixteen years after the second radical operation for carcinoma of the breast should be an argument for its being a second primary growth and not a metastasis from the first carcinoma.

Case 2.—A woman sixty-nine years of age consulted me in February, 1926, complaining of a tumor of the left breast of a few weeks' duration. The tumor was about the size of a hazelnut and was freely moveable in the tissues of the upper outer quadrant.

A complete radical mastectomy was performed at the Asbury Hospital on February 15, 1926.

The pathologic diagnosis by Dr. Floyd Grave was scirrhous carcinoma.

She remained free from further evidence of carcinoma until November, 1936, when she returned with a tumor the size of a walnut directly under the nipple of the right breast. She is now eighty-five years of age. She was sent to the hospital for operation but on the morning of operation she developed a fever which was followed by bronchopneumonia. The operation was as a result postponed until January 19, 1944, when, because of her age and condition of health, a simple mastectomy was performed.

Dr. J. S. McCartney reviewed the sections from the first carcinoma of sixteen years previously and examined the tumor of the right breast with the following report:

"The sections from Asbury Hospital No. 4121, February 15, 1928, show a very fibrous tumor, approximately 75 per cent being fibrous tissue and 25 per cent epithelium and should be called scirrhous carcinoma. The sections No. 044-75, January 19, 1944, show that more than 75 per cent is in the form of coarse masses of epithelial cells with no differentiation into glands and should be called medullary carcinoma or carcinoma simplex."

LIGATION OF FEMORAL VEIN IN THROMBOPHLEBITIS

ARTHUR F. BRATRUD, M.D.

Minneapolis, Minnesota

This patient, a man thirty-four years of age, was first seen and examined at his home on September 18, 1943. At that time his chief complaints were:

(1) pain and swelling of the right leg below the knee and extending to just above the level of the joint; (2) fever; (3) weakness; (4) pain in the right leg on movement or walking.

He stated that about the third week in August, he had an infected finger incised and immediately thereafter started for New York on a buying trip. He stated that he very often scratches his fingers on sharp price tags on furs and that very often an infection will develop. He thought this was the onset of the infection. While on the way to New York City the infected finger was pressed so as to force out the pus. While in New York City he began to have pain and swelling in the right leg. A physician was consulted and a diagnosis of phlebitis of the long saphenous vein was made and he was advised to apply hot packs and rest. After his return home this was continued. A letter was received by the patient from his physician in New York City, which stated he hoped a competent surgeon had already performed a high vein ligation. Ligation of the long saphenous vein at the sapheno-femoral junction was performed. Two days later he was complaining of quite severe pain in the thigh and Dr. McPheters was called. He was admitted again to New Asbury Hospital on September 28, 1943. He had a very severe pain in the right lower chest and right upper abdomen. This was associated with marked coughing and expectoration of bloody sputum. Ligation of the superficial femoral vein was considered. Request for consultation by Dr. Spink was made and he was seen by Dr. Spink on October 1, 1943, and again on October 4, 1943. Consultation reports are as follows:

"October 1, 1943. Pulmonary embolism with infarction following thrombophlebitis is a good possibility. Location is near pleural surface and he may develop effusion.

"℞: I would keep sulfadiazine level around 7 mgs., which will require 1 gm. q., four hours after initial dose of 3 gm. I would give soda bicarbonate gm. 3 q.i.d.,

while receiving sulfadiazine and keep fluid output about 1,000 c.c. He should be getting from 2,500 to 3,000 c.c. fluid daily.

"October 4, 1943.—Patient was seen again tonight after consultation with Dr. Bratrud. Patient is febrile—more so—and the pain has radiated more anteriorly. Nevertheless, he is able to breathe fairly deeply and with normal rate. On examination, marked dullness at the base with very distant breath sounds and voice sounds. At base, breath and voice sounds are absent. No rales present.

"I believe febrile reaction is compatible with chest pathology—which is more extensive. He may have an effusion. If this is confirmed by x-ray, he should have thoracentesis. My only concern now is the possibility of lung abscess developing in the infarcted area. Suggest leukocyte count.

"X-ray findings on September 29, 1943, were as follows:

"A single plate was taken of the chest. Both diaphragm shadows are clear. There is no evidence of fluid. The heart and aorta are within normal limits as to size, shape and position. There is a definite pneumonia, either broncho or virus in type, in the lower lobe of the right lung.

"Conclusions: Pneumonia, either broncho or virus in type, lower lobe of the right lung.

"X-ray findings on October 5, 1943.—A single plate was taken of the chest at the bedside and compared with examination of September 29, 1943. There has been a marked spread in the pneumonia in the lower right lung.

"Conclusions: Marked spread in the pneumonia in the lower lobe of the right lung when compared with the examination of September 29, 1943. The left chest remains negative."

On October 14, 1943, another radiograph was made of his chest which showed there had been a marked clearing in the lower portion of the right lung.

On October 18, 1943, he was seized with another attack of severe pain in the upper right chest with marked dyspnea—high fever—severe cough with expectorations of blood. Consultation was requested by the physician in New York City and Dr. Kinsella was called. His report is as follows:

"History of infected thumb—right thrombophlebitis—ligation and subsequent pulmonary embolism, right base—this area gradually resolved. On October 18, 1943, another sudden attack of pain in the right chest, this time higher up—later expectorated blood—fever, et cetera. Another pulmonary embolism.

"No evidence of abscess to date. Possibly a small amount of fluid or pleural reaction—not enough to warrant attempt at aspiration. Watch for increase.

"R: 1. Keep quiet.

"2. Sympathetic treatment.

"3. Chemotherapy as tolerated.

"4. Watch for abscess and fluid by x-ray."

After the second infarct he did get some relief from being put in the oxygen tent. More consultation was requested and he was seen by Dr. Dennis. His report is as follows:

"October 24, 1943.—From the story which the patient presents, the first episode of chest pain must have been a pulmonary embolism. About the second episode there is reasonable doubt, for the pain gradually increased over a period of hours and hemoptysis did not appear for three days. In any case, the saphenous ligation was done before either episode, and the deep veins must therefore also be involved. At the present time the patient has tenderness in the calf and along the course of the femoral. The right thigh is 1 cm. larger than the left and definitely warmer. Heparin is not indicated because of hemoptysis and it is too late to expect benefit from a sympathetic block. The course recommended, therefore, is either prolonged bed rest, or, preferably, ligation of the femoral, with ligation also of the iliac if clot is found in the femoral. Preliminary venogram is now impracticable."

On October 31, 1943, he was seen again by Dr. Dennis, at the wife's insistence, and after talking to Dr. Lee, in Dr. Bratrud's absence. Considerable edema persists in the right leg.

After he was seen by Dr. Dennis, consent for femoral vein ligation was given. On October 27, 1943, common vein ligation was performed, after which no more infarcts were thrown off. There was no clot at the level of the section of the femoral vein but due to the fact that he had complained of aching pains in the thigh, the femoral vein was ligated above the *Profunda Femoris*. The question of a sympathetic block of the right cervical sympathetic was considered on account of the severe excruciating pain in the right upper chest, but as he seemed to be improving, this was not performed.

X-rays, taken on October 13, 1943, were as follows:

A radiograph was made of the chest and compared with the examination of October 5, 1943. There has been quite marked clearing in the infiltration in the lower portion of the right lung.

On October 19, 1943, radiographs of the chest showed the following findings:

The left lung showed no change, there had been a definite extension of the infiltration in the upper half of the right lung.

Preliminary radiographs made of the gall-bladder region showed no evidence of gallstones. There was no evidence of a gall-bladder shadow.

There was an increase in the trabeculations in the first lumbar vertebra which probably represented a hemangioma.

On October 25, 1943, the following findings were present:

The infiltration at the base of the right lung has nearly completely resolved. There has been an extension in the right upper lobe.

Conclusions: Negative left lung. There has been an extension of the pneumonia in the right upper lobe with some resolution in the base. This lesion in the right upper lobe should be checked in a few days for the possibility of early cavitation.

On October 28, 1943, the x-rays showed partial resolution of the infiltration of the right upper lobe, with some mottling—suggestions of early cavitation.

(Continued on Page 580)

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*Commenting editorially on the work of Mills and Cottingham (J. Immunol. 47:503 [Dec.] 1943), THE JOURNAL states: "They found that after five and one-half weeks maintenance at 68 F. rats showed a maximum phagocytic activity on diets containing 18 per cent of protein. There was a definite decrease in phagocytic activity with an increase or decrease from this level. In rats maintained at 90+F. the phagocytic optimum diet was 36 per cent of protein. Thus adequate protein intake would seem to be fully as important as adequate vitamin intake to maintain optimal phagocytic activity (resistance to microbic infections). The immunologic optimum protein intake is higher in the tropics than in temperate climates. . . . This demonstration of important variations in phagocytic functions is a pioneer contribution to basic immunologic theory and may have wide clinical implications." (J.A.M.A. 124:1203 [April 22] 1944.)

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Reports and Announcements

MEDICAL BROADCAST FOR JULY

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association and the Minnesota Hospital Association.

July 1— 9:30 a.m.—WCCO—Dysentery
July 1—11:30 a.m.—WLB-KROC—Medicine in the News
July 8— 9:30 a.m.—WCCO—Infantile Paralysis
July 8—11:30 a.m.—WLB-KROC—Medicine in the News
July 15— 9:30 a.m.—WCCO—Typhoid Fever
July 15—11:30 a.m.—WLB-KROC—Medicine in the News
July 22— 9:30 a.m.—WCCO—Swimmer's Itch
July 22—11:30 a.m.—WLB-KROC—Medicine in the News
July 24— 4:15 p.m.—WCCO—Your Hospital in Wartime—The Need for Volunteers
July 29— 9:30 a.m.—WCCO—Children's Dentistry
July 29—11:30 a.m.—WLB-KROC—Medicine in the News

REFRESHER COURSE IN OTOLARYNGOLOGY

The University of Illinois College of Medicine announces that its fall didactic and clinical refresher course for specialists in otolaryngology will be held at the college from September 25 to 30, inclusive. The fee for the course is $50.00. Since registration is limited to twenty-five, applications should be filed as early as possible. Write for information to Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois.

AMERICAN BOARD OF OPHTHALMOLOGY

The American Board of Ophthalmology has recently moved into new quarters at Cape Cottage, Maine. All communications should be sent to this address in the future.

The third edition of the Directory of Medical Specialists listing names and biographic data of all persons certified by the fifteen American Boards is to be published early in 1945. Collection of biographic data of the diplomates certified since the 1942 edition, and revision of the older listings in that volume are now going forward rapidly. Diplomates are requested to make prompt return of their notices regarding their biographies as soon as possible after receiving the proper forms from the publication office soon to be mailed to them.

Board examinations for 1945 are scheduled as follows:

Los Angeles, January. During Mid-Winter Course (This examination to be held if the number of applications warrants it). *Deadline* for applications: October 1, 1944.

New York City, June. Exact dates to be announced in various journals about January 1. *Deadline* for applications: December 1, 1944.

Chicago, October. Exact dates later. *Deadline* for applications: April 1, 1945.

Note: All examination dates are contingent on war and transportation conditions.

Please write at once for application blanks to: American Board of Ophthalmology, Cape Cottage, Maine.

Ligation of Femoral Vein in Thrombophlebitis

(Continued from Page 578)

On November 2, 1943, the x-ray film showed postpneumonic pulmonary abscess, upper lobe, right lung. Only at one time after the femoral vein ligation did the patient show any marked rise in temperature, October 27, at which time it reached 100 degrees. Blood sulpha determinations were taken regularly up to the time of the femoral vein ligation. He continued to have a very slight temperature at times up to the time of his discharge on December 1, 1943. At times he would complain of weakness and felt as though he were going to faint, but as he was of a very neurotic type, it was not considered very seriously. He complained of pain in the region of the right knee a great deal of the time.

X-rays taken November 24, 1943, showed no evidence of localized bony erosion or bony trauma in the region of the knee. X-rays of the chest at this time showed further resolution of the infiltration in the upper lobe of the right lung with some thickening on the pleura at the base of the right lung. After the vein ligation the foot was elevated and hot packs were applied. There was a moderate amount of swelling of the thigh and leg, but at no time was any cyanosis present. He was discharged from the hospital on December 1, 1943. He was seen at his home several times after his discharge from the hospital and seemed to be doing very nicely, though at the time he complained of weakness. He developed a sore throat on December 14, 1943, and Dr. Davis was called. Since then he complained of pain in his left chest with shortness of breath and he was hospitalized again. It is very possible that he has had more infarcts thrown off from the thrombophlebitis of the left leg. Had he not improved so nicely while at New Asbury Hospital a venogram of the left leg would have been made.

In reviewing the case, there is no doubt that pulmonary complications and even death could be avoided by femoral vein ligation where a positive venogram is present or where there is positive evidence of a thrombophlebitis or phlebothrombosis.

Communication

To the Editor:

The editorial in the June issue on "Premarital and Prenatal Examinations" would indicate the need and desirability of the publication of additional information on this subject, especially as it pertains to Minnesota. It has been rather impossible during the past two or three years to do justice to publications because of the vastly increased amount of work associated with Selective Service and a personnel not commensurate with this increase. Much of this work in relation to Selective Service and venereal disease is of a character requiring immediate attention and must be completed each day regardless of anything else. Reference in particular is to the increase in laboratory work since the laboratories of the Division of Preventable Diseases have undertaken all tests required by Selective Service and the detachments of the armed forces located within the state. Blood tests reached a peak of 2,800 daily with a resultant increase in clerical, filing, and stenographic work. The writer's correspondence in relation to this work has averaged between four and five hundred letters per week. It is worthy of mention that performing of blood tests for Selective Service has been no mere routine in Minnesota (as in most states) since here a second test has been made in every Selective Service individual who had a questionable first test, and this second test has not been simply a repetition of routine but a complete serological study with seven different tests. So far as is known, no other state has done so complete or thorough a piece of work.

Investigation of all sources or contacts of men in the service found infected has been given immediate attention. In carrying out this work, much of the time with a shortage of help, it has been next to impossible to find time to correlate or tabulate data, let alone prepare it for publication.

The fact that there is no specific law in Minnesota requiring premarital examination or prenatal blood tests is not due to lack of consideration. It has been given most careful consideration. In relation to two previous sessions of the Legislature this matter has been thoroughly discussed with groups of sponsors of such a law and on each occasion when the facts have been made clear it was agreed that such legislation would have little value here and no bill was introduced.

The control of venereal disease presents a problem quite different as to detail in various states or even communities. The problem in a state with a high incidence of early infectious cases as well as a high morbidity rate is vastly different from that in a state where the percentage of infectious cases is low as well as the general morbidity rate. Plans for an urban community are not entirely applicable to a rural community. In relation to the above statement, it is true that nearly every state below the Mason and Dixon line referred to in the editorial has a high morbidity rate with literally thousands of early infectious cases. Minnesota has one of the lowest rates in the entire country, only about twelve per cent of reported cases being of the early infectious type. Actually in 1942 only 240 cases out of a total of 2,359 were listed as early infectious, in 1943 only 244 of a total of 1,879 were recorded as early infectious.

During and immediately following World War I practically every state undertook a program for venereal disease control. Minnesota was the second state to appropriate funds and undertake this work. The writer had the opportunity of organizing the work in California, which was first, and also of organizing and

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directing the work in Minnesota. Unfortunately, in all but a very few states the program was regarded as a war emergency, appropriations were not continued, and all effort lapsed, to be undertaken again only with the appropriation of Federal funds about ten years ago. Minnesota was one of the few states to continue its program consistently from 1918 to the present time. This and the active coöperation of Minnesota physicians account in large measure for the fact that Minnesota is one of five states to show radically lower rates than most other states, as indicated in Selective Service examinations. (Report in *AMA Journal*, Dec. 26, 1942.)

Aside from its educational value a premarital examination law is aimed at uncovering infectious cases and thus preventing spread of the disease and birth of diseased babies. So far as is known, no law, even if enforced one hundred per cent, can completely accomplish these ends. Regardless of what period of time is set for taking the test previous to granting a license, exposure and infection acquired two or three weeks before the blood test would unlikely show a positive test and might show no clinical evidence upon examination, since there is often no evidence of infection for two or three weeks following exposure and it is often four to six weeks after exposure before a blood test becomes positive. Thus there is ample opportunity to miss a case which may be in its most infectious stage at the time of marriage. In the thirty or more days following the taking of a blood test and examination there is certainly ample time for an individual to become infected, and again the case is missed and becomes a very real danger at the time of or immediately following marriage. Almost all of these laws have a clause which makes it possible to grant permission for a marriage to take place without examination; this allows possible opportunity for evasion and collusion. As a matter of fact, substitution of blood is possible at any time.

Practically, nearly every examination is going to depend upon a blood test. In spite of all effort to standardize and to bring all accepted tests to the same degree of specificity and sensitivity they will vary; this means that a person may have one test positive and another negative on the same specimen; a person may very well be positive in one state and negative in another depending upon the routine tests used. Because of such possible variations the physician is warned by almost all laboratories not to diagnose syphilis on a single positive test nor to regard a single negative as indicating the absence of the disease, and yet I know of no premarital examination law which requires examination of a repeated specimen, nor, in fact, the use of more than a single test upon a given specimen. The writer knows of one case personally where a young woman pregnant through premarital intercourse with her fiancé was found to have a positive test in a neighboring state and refused a license to marry. Examination and additional blood studies indicated she was not syphilitic, but for a time she threatened suicide. Such tragedies are not out of the question and lesser ones are bound to result from false positives due to whatever cause.

An occasional individual may show a biologically false positive, sometimes with a certain test, sometimes with all tests. Many things may cause temporary false positives; such situations often require weeks of study and retesting before a satisfactory

conclusion can be reached. Even if the physician should decide a test is false, will the individual or the parent be willing or able to dismiss the thought of it? Many congenital cases adequately treated in childhood continue to carry positive bloods throughout life. A number of such positives have shown up in Selective Service examinations and, unfortunately, it has been impossible in some cases to collect medical records to tell whether the case had been adequately treated or not. A fairly large percentage of cases where treatment is started rather late continue to carry positive bloods in spite of all treatment, and so another problem is presented. In contrast to this it is entirely possible for an individual to have some blood tests negative and yet have a positive spinal fluid indicating an invasion of the nervous system.

In very few states does the premarital examination cover gonorrhea, and yet that disease is often more terrible than syphilis, being responsible as it is for much surgery, sterility, and blindness.

In more specific reference to the question as it applies to Minnesota let us look at some additional data. In Selective Service we are not permitted to give out figures as to the number of men examined, but so far as we can tell the percentage of positive bloods will not be over one per cent and the number of unknown cases discovered very much less than that. Tests made on all students of the University of Minnesota over a considerable period show only about one or two-tenths of one per cent positive. Among the great number of blood donors in this state with all bloods tested there appears to be less than one per cent positive. Possibly sixty to seventy thousand industrial workers have been tested during the past two or three years, here again so far as we can tell positives will run less than one per cent.

During the summer of 1941 when approximately 40,000 men were on maneuvers in the northern part of the state for a six-weeks period, only seven cases of gonorrhea supposedly had sources in Minnesota, but four were questionable. No syphilis was traceable to Minnesota. During the summer of 1943, when 7,000 men were at Camp Ripley for about three months, only six cases of gonorrhea were traceable to contacts in Minnesota, and no syphilis. These two records have been acknowledged as about the best in the country. None of these things just happen but are the result of a satisfactory program persistently carried out.

As stated earlier, in 1942 only 240 cases of early syphilis were recorded, and in 1943, 244 cases. These figures represent the available group from which some infectious cases might be uncovered by premarital examination, but it would be only a part of such numbers since members of this group are already being found. Of these figures in 1942 only 135 men were between twenty and forty as those most likely to marry; in 1943, 153. In 1942, 1,792 out of a total of 2,359 cases reported were congenital, old latent, or neurosyphilis and of no interest so far as such a law is concerned. An additional 296 were listed as early latent, so noninfectious. In 1943, 1,296 out of a total of 1,879 were in this group and an additional 278 were early latent and noninfectious.

It should not be taken for granted that Minnesota is without necessary laws to control venereal disease. Its original regulations have been copied by almost every state. Blood tests or other laboratory specimens can be required whenever desirable and the simple provision of its being a misdemeanor to expose another person makes it possible to handle almost any situation, even to preventing marriage in a known case.

As to prenatal blood tests, between the effect of the low rates and the fact that practically all pregnant women are already being tested there seems little need for such a law. It seems reasonable to expect our medical profession to continue to do this important work without being required by law. In 1942 our record

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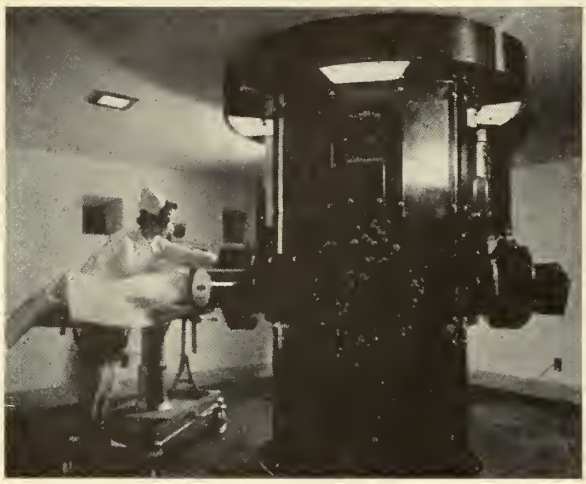
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shows four babies born infected, and in 1943 two babies born infected. In 1942 only nine congenital cases under ten years of age were reported. In 1943 only six congenital cases under ten years of age were reported. No law requires an expectant mother to present herself for such test so there will always be an occasional one get to the doctor too late in her pregnancy for anything to be done, but records indicate congenital syphilis in Minnesota is all but wiped out.

In any state where control has been instituted only in the past few years and rates for early cases are high, such laws may be valuable and very much worth while, but in Minnesota at present it is surely questionable whether the cost of administration and the burden of enforcement are worth while. As an aid to control of venereal disease it would be nearly worthless and so far as its educational value is concerned that work is being done directly with a very complete and comprehensive program. If there is to be some such law should it not be a simple, broad one, covering a complete physical examination, and include gonorrhea, tuberculosis, or any other disease which could be transmitted by contact, as well as certain mental diseases? I believe careful consideration of these comments and data justify the conclusions.

Very truly yours,
MINNESOTA DEPARTMENT OF HEALTH
H. G. IRVINE, M.D.
Consultant in Venereal Diseases

EDITOR'S NOTE: The above communication comes from Doctor Irvine in response to an editorial entitled "Premarital and Prenatal Examinations," which appeared in our June issue, raising the question whether we were not backward in our venereal disease control program. The extent of the activities of this branch of the State Health Department is perhaps not as well known to physicians as it might be.

The advisability of a law in Minnesota making premarital and prenatal examinations compulsory apparently has its pros and cons. It has had its proponents before this and has been considered seriously by the State Health Department. The decision was made that the present publicity regarding venereal disease, free Wassermann testing, and the general practice of such testing in obstetrical patients has resulted in as few cases of congenital syphilis as would result from a compulsory law requiring such examination.

There are those who believe that the marriage contract is often entered into with too little thought, and that the requirement of a doctor's certificate of freedom from venereal disease and tuberculosis would put a brake on hasty marriages which so often end in divorce. Whether such a law, which admittedly could be quite perfunctory, is advisable for Minnesota or not, the medical profession should see to it that every pregnant woman has a blood Wassermann test and should examine for venereal and other contagious diseases in premarital examinations.

In Memoriam

FEGAR MELVIN BABCOCK

Dr. F. M. Babcock, for over twenty-five years a prominent physician of Northfield, Minnesota, passed away May 18, 1944, at the age of fifty-seven.

Dr. Babcock was born August 14, 1886, at Dundas, Minnesota. He graduated from Northfield High School in 1905, and received his B.A. in 1909, and his M.D. in 1913, from the University of Minnesota. He served as resident physician at Thomas Hospital in 1911-12, and as intern at St. Barnabas Hospital, Minneapolis, in 1913-14.

After practicing a year at Preston, Minnesota, he established himself at Northfield in 1914, in association with the late Dr. W. A. Hunt.

During World War I, he served in the medical corps and went overseas in 1919, where he was stationed at the United States Base Hospital at Le Mons until his return in July, 1919. On his return, he was again associated with Doctor Hunt until the latter's death in 1920.

Doctor Babcock was a member of the Northfield City Council for eleven years and was local surgeon for the Chicago, Milwaukee, and Saint Paul Railroad for twenty years.

He was a past master of Social Lodge, a member of the Modern Woodmen, United Workmen, and the Eagles Lodge. He was also a member of the Rice County Medical Society, the Minnesota State and American Medical Associations. Doctor Babcock is survived by his sister, Lena Babcock, with whom he made his home.

CARL FISHER

Word has been received of the death of Dr. Carl Fisher, former member of the staff of the Mayo Clinic, Rochester, which occured June 7 at Los Angeles, California.

Dr. Fisher was born July 16, 1879, at Breckenridge, Minnesota. He received the degree of B. S. in 1901 from Carleton College, Northfield, Minnesota, and of M.D. in 1905 from Harvard University. He was an intern in ophthalmology at the Massachusetts Charitable Eye and Ear Infirmary, Boston, from July, 1905, to January, 1907, and was later intern at the Carney Hospital, the Massachusetts General Hospital, and the Infants' Hospital, Boston. He entered the Mayo Clinic as head of the Section on Ophthalmology and Otology May 1, 1909, and remained until July 1, 1917. He served in the



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Army of the United States from December, 1917, to August, 1919. He was commissioned lieutenant and then captain in the medical reserve corps and later became a major in the medical corps of the A.E.F., being stationed at Base Hospitals 26, 115 and 57. He was in practice at Los Angeles from March, 1921, until the time of his death, was associate professor of ophthamology at the University of Southern California School of Medicine and a member of the staff of the Good Hope Clinic, the Los Angeles Eye and Ear Hospital, St. Vincent's Hospital and the Hospital of the Good Samaritan.

He was certified as a specialist in ophthalmology in 1920 by the American Board of Ophthalmology. He was a fellow of the American College of Surgeons and a member of the American Medical Association, the Los Angeles Ophthalmological Society, the Los Angeles Clinical and Pathological Society, the American Ophthalmological Society, the American Academy of Ophthalmology and Otology and the Alumni Association of the Mayo Foundation.

FRANK HENRY HACKING

Dr. Frank Henry Hacking, a resident of Minneapolis since 1914, died June 2, 1944, in Fairview Hospital, Minneapolis.

Doctor Hacking was born February 5, 1872, at Listowel, Ontario, Canada. He attended Winnipeg High School and Manitoba Collegiate Institute at Winnipeg, from which he graduated in 1889. He received his medical degree from Rush Medical College in 1899, and interned at the Norwegian Deaconess Hospital in Chicago. He served as assistant in clinical medicine at Chicago Clinical School in 1900.

He practiced in Chicago in 1900, Wood Lake, Minnesota in 1901, and in Granite Falls from 1902 to 1913. Since 1914, he had lived in Minneapolis. While in Granite Falls, he served as secretary of the Camp Release Medical Society from 1907 to 1912, and as president in 1913.

In Minneapolis, Doctor Hacking was physician-in-charge of Thomas Hospital for tuberculosis from 1915 to 1919 and medical superintendent of Hopewell Hospital in 1919. He was an attending physician at Glen Lake Sanatorium from 1921 to 1935, and on the Federal Board of Rehabilitation and attending specialist in tuberclosis of the United States Veterans Bureau from 1919 to 1926. He was also a member of the executive committee of the Hennepin County Tuberculosis Association from 1920 to 1937 and president of the Minnesota Association for Crippled Children from 1925 to 1929. During World War I, he was acting chief-of-staff of the Minneapolis General Hospital.

Doctor Hacking was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, and of the Knights of Pythias.

Of General Interest

Dr. John A. Paulson of Rochester has recently been commissioned as Lieutenant (sg) in the United States Naval Reserve.

* * *

Dr. F. A. Figi of Rochester was re-elected secretary-treasurer of the American Association of Oral and Plastic Surgeons at the recent meeting held in Philadelphia.

* * *

Dr. R. M. Watson, who recently completed internship at Miller Hospital, Saint Paul, has been appointed resident head for a period of one year beginning June 1, 1944.

* * *

Dr. Philip R. Beckjord of Willmar, who enlisted in October, 1940, has been promoted to the rank of Lieutenant Colonel and is now Commanding Officer of a Medical Battalion in Texas.

* * *

Lieutenant Robert W. Merrill was at home in Morris, Minnesota, in June on leave from Hattiesburg, Mississippi, where he has been stationed. He entered the naval service in September, 1942.

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Dr. Vern L. Zech, recently resident physician at Midway Hospital, Saint Paul, has joined the Ortonville Clinic, Ortonville, Minnesota, as a regular member of the staff.

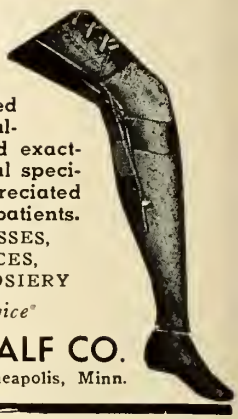
* * *

Dr. Robert B. Tweedy was elected president of the Winona General Hospital staff at its annual meeting in June. Other officers named are Dr. William Heise, vice president; Dr. G. L. Loomis, secretary.

* * *

Dr. Charles Baker, son of Dr. A. C. Baker of Fergus Falls, has opened offices in Herman, Minnesota, for the practice of medicine. He will also assist with surgery at Wright Hospital in Fergus Falls four days a week.

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Dr. James T. Larson has become associated in practice with Drs. Lowe, Ernest and Lowe in South Saint Paul. Dr. Larson, a graduate of the University of Minnesota medical school has been in practice for the past thirteen years.

* * *

Dr. R. B. Patterson, formerly of Brainerd, is now associated in practice with Dr. W. W. Yaeger at Marshall. Dr. Patterson, a graduate of the University of Minnesota, had been practicing in Illinois since the first of the year, when he was given a medical discharge from the Army, having served one and a half years in the Army Reserve Medical Corps.

* * *

Dr. D. E. McBroom, Superintendent of Minnesota Colony for Epileptics, Cambridge, Minnesota, has resigned his position there after many years of service to the state and has accepted the superintendency of the State School and Home for Feebleminded at Redfield, South Dakota.

* * *

Two members of the staff of the Duluth Clinic, now in service, have recently received promotions. Dr. William D. Coventry, Army Air Corps physician stationed at Mitchel Field, was promoted from Captain to Major. Dr. R. H. La Bree, serving with the station hospital at Camp Abbott, Bend, Oregon, also was promoted to Major.

* * *

Dr. F. E. Harrington of Minneapolis has accepted the superintendency of the Minneapolis General Hospital on a conditional basis for the duration of the war. Dr. Harrington retired as city health commissioner, effective June 21, 1944, but was asked to continue as superintendent of General Hospital, a position he has been filling pending the appointment of a full-time superintendent. Dr. Frank J. Hill, former North Dakota state health officer, succeeds Dr. Harrington as city health commissioner.

* * *

Dr. H. B. Aitkens of Le Center was honored at a dinner given by the community which he has served for fifty years on May 25 in the high school auditorium. He was presented with a purse to cover expenses of a trip to his native England and a plaque "In appreciation of fifty years of faithful service as family doctor in Le Center since April 9, 1894." Additional appreciation was expressed in the conferring of an honorary mem-

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bership in the American Legion post and life membership in the Le Center Community Club.

Dr. Aitkens, in addition to his professional duties, has served for forty years on the local school board, having been president for more than thirty years. He is a member of the Nicollet-LeSueur County Medical Society, Southern Minnesota Medical Association, state and national medical associations, and has been active as a member of the Episcopal church. He has been examining physician for participants in four wars, having examined a Civil War veteran for pension award, in addition to inductees in the Spanish-American War, World War I and World War II.

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 August, 1944 Number 8

CERTAIN OBLIGATIONS OF THE PHYSICIAN

E. MENDELSSOHN JONES, M.D.

Saint Paul, Minnesota

MOST of us here tonight grew up in a practice and profession whose mold appeared fixed and unchanging. Our duty seemed clear. It was to take care of the sick and keep up with the rapid advances of scientific medicine so that our patients would have the best that scientific medicine had to offer. It seemed to us that all of our time and energies were required to attain that goal.

We have always known that some people could not afford expensive medical service and we have tried to give them the care they needed for less. We have also known that some people stayed away from the doctor until it was too late because they felt they could not pay. In point of fact, a recent survey made by the National Physicians' Committee showed that 29 per cent of the people questioned had indeed put off consulting a physician because of possible costs.

Nevertheless, we have tried to keep our charges within the ability of the patient to pay and we have, likewise, given a considerable share of our time and thought, individually, to charity services for which we asked and expected no financial return, because we have all understood such services to be part of the obligations of medical practice.

We have felt that the social ills which were reflected in the failure of some people to secure good medical service were no more the responsibility of the doctors than of the lawyers, businessmen or government officials.

It may be that we have been a little backward in our perception of larger social problems, except as they involved the misfortunes of an individual patient or his family. Rightly or wrongly, we may have thought that they were not our business.

Be that as it may, it is now clear that social aspects of medical service, at least, are our business. We must devote time and attention, in spite of wartime responsibility and burdens, to problems of quantity and distribution beyond the limits of our own practices. Our future as independent practioners of a progressive science is at stake.

There are a great many people in the United States who believe honestly that an over-all plan for better distribution of medical services should be the first step in the solution of our most pressing social problems. It is true, for the most part, that these people are not practicing physicians; but they are vocal and eloquent. Editors and bureaucrats lend them a ready ear. Many intelligent people listen to them seriously. And whatever our personal feeling may be, we are not entitled to regard their efforts as simple enmity, nor as a plot against the medical profession. On the contrary, we are under grave obligation to examine all of their proposals with care.

It is unfortunate that so many of these earnest reformers believe that government control of medical services is the answer to the problem. As practicing physicians, we are convinced that government control would destroy private practice entirely and place the care of the sick in the

Presidential Address at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 14, 1944.

hands of the politicians. But it is also unfortunate that medical men, while fighting a thing which they honestly believe to be a threat to the public welfare, should also have been jockeyed so often into an appearance of stubborn self-interest and obstructiveness.

It is a fact that the average health of the people of the United States is good; that our medical services in general are the best in the world today. It is also a fact that there are sections of the United States, especially in the South, where the number of doctors and hospitals, even in peacetime, was very inadequate. And medical service as we know it in Minnesota was completely out of reach of great numbers of the people. The fault, in this instance, does not lie with the medical profession, of course; but no good will come of denying the facts, nor of glossing them over for the sake of painting a rosy picture. The facts are there.

It is a fact that in most sections of the United States any man, woman or child who seeks it can get good medical care in case of need, and that better care is available for the sick poor than anywhere else on the face of the globe today. It is also a fact that the cost of good medical service has mounted greatly in the last fifty years and that people of small income are often deterred from getting all of the care we would like to give them because the costs are too high. We know that here, too, the fault does not lie with the individual doctor. But no good will come from denying the fact that the problem exists. It is a problem which we, as doctors, should be the first to endeavor to solve.

We are now engaged in a great and a necessary fight against the legislation introduced by Senators Wagner and Murray and Representative Dingell which provides for compulsory medical and hospital insurance as part of the social security protections of the United States. The pernicious aspects of this legislation will not be discussed here as they are well known to all of you. It is essential to the future of medicine in the United States that we oppose it by every means at our disposal, as public-spirited men and women.

It is necessary that we go to Washington, as an organization, and take our part, there, with respresentatives of other professions concerned with the care of the sick, so that we may keep constantly before Congress the requirements of good medical service and the necessity, for the sake of the public welfare, of preserving high professional standards. And, indeed, I am happy to be able to announce that now, after considerable delay, the medical profession has established its own office in the national capitol. The machinery is at last set up to handle our public relations as they should have been handled long ago. It is gratifying to know, also, that the movement within the profession which brought about this important development, began right here in Minnesota, with the work of our leaders and the action taken by our House of Delegates last year.

But let us not sit back, on that account, and again submerge ourselves in the practice of medicine. We are better equipped, now, to fight unsound legislation in Washington, it is true. But the job is not done. You do not save a system or a service or a business merely by fighting those who want to change it. Your system or your service or your science must grow with the times. It must develop to meet the changing social, as well as professional, needs of the people. It must constantly enlarge its scope, set new sights, find new solutions to new problems.

Thus, in the distribution of medical services, there are still great problems to be solved. They are bound up, if you like, with the other problems which afflict our national economy. They may not, with fairness, be laid exclusively at our door. But they are our problems because they concern the health of the people and the care of the sick. We must study them, we must find solutions for them, and then we must go out as reformers and leaders, ourselves, to put them into effect.

If we do not believe that compulsory sickness insurance under government domination is the solution, then what do we believe? That we can simply go on as before, in a world full of planners and reformers, and that, somehow, the bad spots and the uncomfortable facts will take care of themselves?

It would seem that the solutions we are seeking lie in many directions and in the development of many new techniques, all of them within the scope and pattern of the independent practice of medicine and often with the coöperation of the government itself. It would seem that these solutions must be found, community by community,

and state by state. That they should not be imposed as a rule-of-thumb by remote government agencies.

In Minnesota, it is true, we have gone a long way in the solution of problems peculiar to our state; but we must not and cannot rest upon well-earned laurels.

We are all overburdened with wartime practice, at home. We are taking care of our own and our colleagues' patients while they are in the service and we fancy, perhaps, that we are doing everything for our country and profession that could be expected of us. But this is not a question of abstract justice, nor of right nor of convenience. Emergencies always transcend abstractions and brush aside personal rights and conveniences. And this is an emergency.

We must plan now for better health and better distribution of services and facilities for the people of Minnesota after the war. There are places, even here, where doctors are too few and hospitals are inadequate. There are people, even in Minnesota, who find medical costs too hard to bear.

What are we going to do about it? We have established a Committee on Postwar Planning in the Council which is to have a representative on its membership from every county in the state. This committee was not created merely because postwar planning is the thing, these days. It was established because we need it badly and, to carry out its purpose, extra time and effort will be required from men whose hands are already full and whose time is seldom their own. That purpose is to make a county by county study of medical needs in Minnesota. Is a hospital needed here? Another doctor there? This committee must know about it. Its conclusions must be based upon the solid facts of transportation, population and facilities already in existence here.

There facts must stand up under scrutiny and they must be ready to guide us when the war is over, when our soldiers come back and we actually begin to put into effect all of our plans for a fine, new postwar world.

In Minnesota we have had a distinguished and efficient health administration for many years. The department and the board have worked closely with the doctors of the state and have achieved enviable records in the control of communicable disease. But our health department has often been tied down by lack of funds and lack of public interest in its work. Are we, in Minnesota, to wait for Washington to prod us into expanding our public health services and increasing their personnel? Our postwar planning for Minnesota should take into account, as fundamental to the health and welfare of our people in the future, the steady development of sanitation, disease control and routine protections against preventable disease.

We must also take into account medical costs and the growth of the insurance idea for spreading the burden of costs, at least in the case of catastrophic illness. The survey conducted by the National Physicians' Committee showed that no less than 63 per cent of the people questioned believe methods could be devised for easier payments for medical care.

We are all aware of the fact that modern diagnostic devices and equipment are expensive and that full use of these is sometimes too great a burden for the average patient, even in moderate circumstances, to finance. We have all tried honestly to adjust these bills, as far as possible, to the ability of the individual patient to pay. On the other hand, have we ever made a serious, organized study of costs to find out if there are not, perhaps, ways of cutting here, of joint use of facilities there, of better business methods elsewhere, which would permit us to give the same service for less? Businessmen have done it. But, of course, we are not businessmen and we have taken refuge in the fact that medical service is personal service and not susceptible to mass procedures and savings. Nevertheless, some of our equipment, involving large capital expenditures and high overhead, sometimes lies idle for long periods of time while like equipment lies idle, too, in the office next door. Duplication and waste are not essential to good medical service. If we are to maintain ourselves as a free and independent profession we are going to have to study these things. Let's study them first in Minnesota.

And let us also study carefully all insurance and pre-payment plans for delivery of medical service.

There is nothing unsound nor unethical in the insurance principle as applied to costs of medical service. It has been approved by organized medicine and is now under experiment in a number

of counties and states in the United States. Many of these experiments were undertaken in industrial communities and the plans were forced into being to meet an acute need. No such emergency measures have been necessary in Minnesota and we have been allowed time for study and observation so that our own plans, if we decide to undertake them, may hope to avoid costly blunders which plagued the pioneering efforts in other states. It seems obvious that insurance or prepayment plans for covering medical costs are the trend of the future; and that some form of insurance protection will be as much a part of the fixed costs of living for the average family, some day, as protections against fire, theft, accident and loss of life.

If compulsory legislation fails of passage at this session of Congress—and we hope it will fail—then we must be ready to offer a voluntary means of spreading medical costs to those who want it. If we do not, new legislation will be introduced next year, or the next, and our chance to remain free men and physicians instead of medical jobholders will grow steadily smaller.

Not long ago our own congressman from the fifth district of Minneapolis, Dr. Walter H. Judd, told the National Conference on Medical Service in Chicago, that he believed the Wagner-Murray-Dingell Bill would not pass the Congress this year. "That means," he told the conference, "that you will have a breathing spell. But it will be your last breathing spell. If you fail to do the things that need to be done now, you will be too late."

Let us use our breathing spell to good effect in Minnesota. Let us fight compulsive legislation with all our might. But let us also study our situation well in our state and be the first—not the last—to advocate a sound, public-spirited health and medical policy for Minnesota in the postwar world.

MALIGNANT CARCINOID TUMORS OF THE SMALL INTESTINE

Report of Two Cases

J. E. BLUMGREN, M.D.
Duluth, Minnesota

THE carcinoid or argentaffine tumor is considered by many physicians to be benign. This is especially true among the younger men; all of the interns during the past few years at St. Mary's Hospital registered surprise on learning of the malignant possibilities of this tumor. In the past six months, two malignant carcinoids of the small bowel have come to autospy. It is the purpose of this paper to report these two cases and discuss some of the characteristics of this tumor.

Case 1.—A fifty-year-old housewife, a patient of Drs. H. E. Bakkila and J. R. Manley, was first admitted to St. Mary's Hospital on December 28, 1941. Her history centers around gastro-intestinal complaints, constipation, and diarrhea for two months, questionable tarry stools and a weight loss of 15 pounds in the previous three months. On physical examination the liver extended two to three fingers below the costal margin and was thought to be somewhat rough but not tender. A freely movable, palpable mass was located just above the umbilicus.

The clinical laboratory data were not remarkable. X-ray studies were made of the gastro-intestinal tract and the colon. The report revealed no intrinsic disease of the stomach. However, the stomach was shifted to the left which was interpreted as due to an enlarged left lobe of the liver. There was some irregularity and deformity of the pyloric end of the stomach, probably due to adhesions. It was suggested if the patient was explored, that this area should be thoroughly examined to rule out malignancy of the pancreas or glands in this area. The colon was reported negative. The palpable mass in the abdomen was below the colon and did not appear to be connected with it.

She was explored on January 2, 1942, and a hard, white mass measuring 1.5x2.5 inches was found in the root of the mesentery of the small intestines. The liver was infiltrated throughout. A biopsy was taken from the mesenteric mass which was later reported as hyalin connective tissue. It was felt that nothing could be done and the wound was closed. The surgeon's impression was malignancy with liver metastasis. Her recovery from the operation was rapid and she was discharged on January 12, 1943.

She returned to the hospital on September 11, 1943. During the interval she had received numerous x-rav treatments, had felt reasonably well for a few months after leaving the hospital, but gradually had gone down

From the Department of Pathology, St. Mary's Hospital, Duluth, Minnesota. Read before the St. Louis County Medical Society, Duluth, Minnesota, March 3, 1944.

hill. She was given symptomatic treatment and expired September 22, 1943, approximately one year and ten months after the operation.

At autopsy, the mass in the mesentery of the small intestine measured approximately 5 cm. in diameter and was made up of considerable fibrous tissue. It extended into the wall of the small bowel at a point about 5 feet from the ileocecal valve. Although the outer layers of the intestinal wall were involved, there was no apparent break in the mucosa. However, the mass pushed into the lumen to some degree, but not obstructively. The remainder of the gastro-intestinal tract including the appendix appeared essentially normal. The liver weighed 2,410 grams and was studded throughout with gray-yellow nodules measuring up to 4 cm. in diameter. There was scattered retroperitoneal lymph node enlargement which on cross-section, as did the primary tumor, presented a gray-yellowish color similar to the nodules in the liver.

The microscopic examination of the primary mesenteric tumor and the metastatic lesions in the liver and lymph nodes was typically carcinoid. The cells were in cords and nests of atypical epithelium of moderate or small size and usually polyhedral. Occasionally mitosis could be seen. The cells were embedded in newly formed connective tissue.

Case 2.—A truck driver, fifty years of age, a patient of Dr. R. Bardon, entered the hospital on October 14, 1943. He gave a history of stomach trouble, gas and discomfort, occasional nausea, but no vomiting and a weight loss of 20 pounds in the past seven or eight months. His stools had been somewhat irregular for about one year but he had never noticed any which were definitely black. Ankle edema had been present for about one month. Physical examination revealed the liver to be definitely enlarged, quite firm, but not tender. No other masses were noticed in the abdomen. The ankles showed a 1+ pitting edema. The prostate was 2+ symmetrically enlarged and questionably firm.

The clinical laboratory added nothing unusual. X-ray studies of the stomach had been made before entering the hospital and were reported negative. X-rays taken while in the hospital revealed metastatic malignancy involving the chest, pelvis, and ribs. The skull was negative.

A proctoscopic examination was negative. A punch biopsy of the liver was unsatisfactory. It was felt that there was not much to be done and he was discharged October 28, 1943 with a diagnostic impression of metastatic malignancy primary probably in the prostate.

He was readmitted on January 26, 1944, stating he had been gradually becoming worse and recently had noticed an increase in the number of watery, foamy stools. A physical examination revealed evidence of additional weight loss, edema, ascites and a distended abdomen, making it difficult to outline the liver and spleen. His treatment was symptomatic and he expired on February 15, 1944.

At autopsy, a somewhat irregular, rounded, and slightly prominent tumor mass measuring 3 cm. in diameter was found about 4 cm. above the ileocecal valve opposite the attachment of the mesentery. The mass involved all the layers of the wall of the small intestine and protruded into the lumen about .25 of an inch. The remainder of the gastro-intestinal tract including the appendix did not show anything remarkable. Metastases was found in the retroperitoneal glands (near cecum), liver, spine, ribs, sternum, pelvic bones, lungs, and spleen. Cross-section of the tumors in all these locations revealed a rather firm grayish-yellow tissue. A microscopic examination of the primary tumor and metastasis was typically carcinoid.

The above two cases represent single lesions of the small bowel. However, multiple lesions have been reported. Humphreys[2] in 152 cases found multiple lesions in 30 per cent. The average number per case being two to ten lesions. Pennington and Priestley[5] report a case with sixty-eight different tumors in a segment of the small bowel. Our first patient has a history of almost two years from the time of the first symptoms until death and illustrates the usual metastatic lesions to the liver and the regional lymph nodes. In our second case the involvement was undoubtedly much more advanced before symptoms were apparent and the course much shorter. In searching the literature, bone metastasis has not been a common finding and no case, that I was able to find, records as extensive an involvement as this case presents. As is common to most all carcinoids, neither of our cases was diagnosed ante mortem.

Discussion

The origin of carcinoid tumors has been a controversial subject and has resulted in many names which are based on morphology, staining reactions and behavior, or various theories of origin. Presently, the Kultschitsky or argentaffine cells of the crypts of Lieberkuhn are believed to be the cells of origin. The data from an article by Porter and Whelan[6] is interesting. The name carcinoid was first suggested in 1907 by Oberndorfer and is the name commonly used today. At that time, he believed this tumor to be entirely benign. Ransom in 1890 reported the first malignant argentaffinoma originating in the ileum and metastizing to the liver. Although Oberndorfer was first to point out the chronaffinity of the tumor cells, it was Gassett and Masson in 1914 who clearly showed that the cells were argentaffine and represented down growths from the bases of the crypts of the appendiceal mucosa. Schuldt[7] in discussing the histology of the gastro-intestin-

al tract quotes references which reveal these silver absorbing cells to be located close to the basement membrane in the crypts of Lieberkuhn and have been observed in practically the entire gastro-intestinal tract including the gall bladder.

Carcinoids are most frequent in the appendix and lower ileum but, as shown above, may be found in any location in the entire intestinal tract including the gall bladder. Humphreys[2] mentions a few which have been reported as occurring in the duodenum and rarely in the stomach. Porter and Whelan[6] report carcinoids are twice as common in the appendix as in the small bowel and that elsewhere in the gastro-intestinal tract they are found in the stomach, the gall bladder, the duodenum, Meckel's diverticulum, cecum, and colon. Hopping, Dockerty, and Masson[1] believe that carcinoid occurs about once in every 200 surgically removed appendices, and of this number, about 50 per cent are located in the tip. Elsewhere, they occur in decreasing order of frequency in the ileum, the cecum, the jejunum, the colon, and the stomach.

It seems reasonable to state that carcinoid tumors may be found anywhere in the gastro-intestinal tract between the esophagogastric injunction and the anus, including the gall bladder. The age instance of these tumors is not definitely stated. I suppose one may assume that they may occur at any age. Statistics definitely show that carcinoids of the appendix appear in an earlier age group, averaging probably twenty-five years. Carcinoids of the gastro-intestinal tract for most part occur in the cancer age group.

Malignancy.—Much debate has occurred regarding the question of when is a carcinoid benign and when malignant. Pathologists do not seem to agree, but it seems safe to say that all are potentially malignant and if allowed to grow long enough, they undoubtedly will break into and infiltrate the surrounding tissue. Where they go from there seems to vary in different individuals. The liver and regional nodes are the common locations for metastasis. For the most part, they seem to be a slow-growing tumor and, if producing obstruction, should be removed even in the presence of metastasis. Pennington and Priestley[5] report a patient who was alive and in excellent health nineteen months after palliative resection which was done in the presence of liver and peritoneal metastasis. This is the case we have previously mentioned in which there were sixty-eight different tumors. Latimer[3] mentions Mallory's patient who, with a portion of the ileum resected, lived fifteen years to die of another cause. At autopsy, enlarged retroperitoneal glands were found which proved similar to the previously removed carcinoid. Porter and Whelan[6] mention other similar cases, proving the slow-growing tendency of these tumors.

The incidence of metastasis in carcinoid of the appendix is reported by Uihlein and McDonald[8] as less than 1 per cent in 127 cases. Pennington and Priestley[5] summarized the literature using the combined figures of Cook and Ariel as follows. The total number of carcinoids of the small intestine was 237 in which obstructive symptoms occurred in 24.4 per cent, and metastatic lesions in 25 per cent.

Humphreys[2] feels that the thread of malignancy is inherent and the low degree of malignancy in the appendix may be due to the early removal because of symptoms referable to the appendix. Not overlooking other possibilities, it seems that early removal of the appendix would certainly reduce the number of malignant carcinoids especially when their slow growing character is considered.

Pre-operative diagnosis is for most part impossible, but the possibility of malignancy should be thought of when a tumor is found in the appendix.

The symptoms of this tumor in the appendix are no different than the chronic or acute symptoms of this organ. In the small bowel, the one major symptom, when present, is intestinal obstruction. When this occurs, the tumor has undoubtedly been present for some time. Miller and Herrmann[4] advance the presence of a coexistence of kinking and tumors of the bowel as a suggestive basis for diagnosis of these tumors. They believe with this x-ray evidence that it may be possible to diagnose these tumors especially in a middle-aged individual with a history of long standing gaseous distention, bloating, occasional diarrhea, periumbilical pain and associated weight loss.

Treatment of benign lesion of the appendix is appendectomy. Treatment of small bowel lesions is surgical. The relief of obstruction in the face of metastasis may mean years of useful life to the patient as has been previously pointed out in this paper. The multiplicity of these tumors

should be remembered as it may necessitate a removal of a considerable portion of the bowel.

Summary

1. Two cases of malignant carcinoid tumors of the ileum are reported; one with widespread metastases involving retroperitoneal nodes, liver, lungs, spleen, ribs, sternum and spine.

2. Carcinoid tumors apparently originate from the argentaffine cells of the crypts of Lieberkuhn and may be located anywhere in the gastro-intestinal tract below the esophagogastric junction, including the gall bladder.

3. All carcinoids are probably potentially malignant but because they are slow growing have commonly been considered benign.

4. There is a possibility that some carcinoid tumors of the small bowel may be diagnosed by x-ray.

5. Irrespective of the location, the treatment is surgery, even in the face of metastasis.

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PROVIDING FOR THE NUTRITIONAL NEEDS OF THE OLDER PATIENTS IN GENERAL HOSPITALS

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THE age level at death of our patients is ever increasing. The price many people pay for living into the seventh and eighth decades, or beyond, entails accommodation to physical restructions and mental hazards. It is not alone that they go to our hospitals for the final illness, but they go there more and more frequently for current illnesses, operations and periods of stabilization in terms of rest, diet, or physiotherapeutic regimen.

The field of general hospital service is ever changing; the social economy, industrial and agrarian, suffers dislocation even in times of peace. Many restrictions imposed by wartime may survive the ultimate peace. It behooves the hospitals to feel their way toward that service that best meets the needs imposed by events and developments. Survival is at stake, and obsolescence is invited where the fundamental issues are not given consideration. This applies as fully to hospitals as to physicians. Our privately-controlled general hospitals face an opportunity to demonstrate anew that in the presence of uncertainty, conflict and a changing order, they are able to meet the exigencies and provide the best medical-hospital treatment in the world.

Those writing upon the geriatric phases of medical care[1,2,4,5,6,8] emphasize that assembly line techniques for medical and hospital service appeal only to routinists. It is true that many routines, such as the Schick and Dick testing of children, or the administration of disease-preventing vaccines, have helped to give us our "problem of the aged" by preventing mass epidemic deaths. The medical problems that arise in this aging group call for sincere, foresighted planning. There is no shortcut which will eliminate the need for tedious individual patient study and determination of needs.

The Factor of Nutrition in Geriatrics

This heading naturally brings to mind the details of dietetics, food supplies, service, kitchens, and a multiplicity of details concerning which the medical staffs are either uninformed or needlessly critical. A more thorough analysis and an attempt at a grouping of patients according to their physical and mental status are advisable. It would then be possible to give max-

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imum dietary supervision to the groups when it is most productive. Adjustment has not yet been accomplished in terms of the present-day problems imposed by the shift in population toward the fifth to the ninth decades. Table I is illuminating.

The satisfactory feeding of all hospital patients calls for the utmost in planning and cooperation. The problem should be understood not on a theoretical basis but from an analysis of the conditions for which people seek hospital care. The final route of death may not be the best way to determine the major fields of illness demanding hospital bed space, but no better one is presently available.

The writer, in a chapter for The Handbook of Nutrition[9], commenting upon the growing problems of senescene and cancer and the diet factor, made these observations:

"Undernutrition reduces vitality and well-being much more than it hastens decline or senility. It is hard to believe that 'optimum nutrition' could endanger anybody's vascular system. The trouble lies in finding an 'optimum diet'—because it varies with every locale, every people, employment and individual purpose; and nature has distributed around the world the widest assortment of adequate food sources. Some may like a 'short life and a merry one'—at least at middle age that is their choice. Whatever the process by which it is brought about, 70 per cent of our Duluth Clinic patients are dying of cancer and cardiovascular-renal disease (including cerebral hemorrhage). This figure for cancer (18 per cent) is higher than the Minnesota State Board of Health figures (14 per cent) for 1941 and represents a higher than average of older people in our clientele."

Therefore, dietitians should have an awareness of the disease states that bring people under their hospital supervision.

Surgeons are battling hard against cancer. At this time their chief reliance is upon such such major operations as the partial or total removal of the stomach or colon. The nutritional preparation of these patients is equal in importance to the skill of the surgeon. It is disheartening to observe, in a current review of about 3,000 charts* where the ultimate cause of death is known, how few patients operated upon "successfully" for breast, stomach, and thyroid malignancy, die eventually of some other cause.

*This study is of patients seen at the Duluth Clinic for whom histories are on file from 1915 on; where the deaths are possible of certification, the cause thereof as listed in the Board of Health records has been tabulated.

TABLE I. DEATHS OCCURRING IN DULUTH IN 1942.

	Per Cent.
Under 1 year of age	6.95
Over 45 years of age	83.22
Over 60 years of age	64.08
Over 70 years of age	41.40
Over 75 years of age	29.87
Over 80 years of age	17.76
Over 90 years of age	1.71

Total number of deaths—1,222.

Average age at death—60.78 years.

When less than 20 per cent die under age 45, it is obvious that preventable disease (including tuberculosis) is *not* the younger age menace it was three decades ago.

This means that life prolongation has been a more conspicuous accomplishment than cure. Breast cancers have recurred with bone and other metastases after twenty years of latency!

The question of dietary adequacy for those with hopelessly incurable disease (with the possible exceptions of some of the insane) is tied up with the circumstance that existence is largely vegetative and permits little finesse. Enacting and time-consuming dietary supervision should be developed and become an accepted part of the hospital's medical and surgical therapeutic routine. But such feeding is impossible for many untidy, unco-operative and chronic illness patients.

If arrangements can be made for the segregation of patients afflicted with inoperable cancer, hemiplegia, senility and insanity under those interested and skilled in their nursing care, then the hospitals have a field where energetic individual study of each patient is instituted to accomplish the most possible in as few days or weeks as practicable. The stress of war teaches what may be done where hospital turnover counts. No center catering to a self-supporting population group can afford to be without such a medical unit.

There are many regions of our extensive country where such hospital centers should be added. These remarks, however, are addressed to the very numerous institutions already in active service under varied management. They must adjust themselves to meet the local needs. No centrally pre-arranged and superimposed bureaucratized chain of hospitals will ever function as well.

The following items, as they pertain to nutri-

tional balance from the hospital standpoint, are offered as general suggestions based upon the medical problems faced and the facts in the field of nutrition that are now known.

1. A large percentage of general hospital patients need little dietary reform. They enter in quite good health for surgical care or for acute medical control. The period involved is too short to make effective any noteworthy change in improper dietary habits and the current illness or operation negates such efforts.

2. Some patients enter the hospital for such diagnostic study as their complaints and symptoms call for. A review will indicate that malnutrition is either a primary or a decisive secondary factor. Diabetes, certain anemias, chronic arthritis, ulcerative colitis, gout, and the most common of all—malnutrition, obesity and chronic alcoholism make up this group. Concentrated dietary considerations are paramount. Morale building is vital.

3. A test comes, however, in terms of the older age group that face the issue of major surgery for cancer or obstruction along the gastro-intestinal tract (from any cause), and those who, for any reason, have suffered excessive weight loss and face death if rehabilitation is not accomplished. The methods used should stem from a proper implementing of *all* the hospital facilities; but the *correlation between the clinical laboratories and the department of dietetics best shows the way.* These subheadings illustrate where and how rehabilitation and nutritional balance yield large dividends in lessened mortality and morbidity.

(a) No patient with a striking weight loss should be submitted to surgery for cancer of the gastro-intestinal tract without first adequately restoring his blood and tissue proteins. When this lesson is heeded no one will longer retain the age-old suspicion of protein, or advise so many older people to "leave meat out." The laboratory is able through its blood bank to meet any emergency. The parenteral solutions of the amino acids are being constantly made safer; reactions from plasma and serum are rarely encountered. Exact estimations in the laboratory, including daily weighing of the patient, give an objective graph wherewith to fortify the judgment of the physician. A normal person of average weight needs at least 80 grams of protein for body maintenance. At the first evidence of illness, protein is often the first element omitted; when the reserves are depleted every possible means must be utilized to restore them.

(b) Diet lists for specific diseases should be eliminated. This would challenge attendants to develop an elemental understanding of the nutritional needs and status of each patient regardless of age or presenting symptoms. If the nutritional status of each patient is understood and proper measures taken to put him into protein (nitrogenous) balance before any major surgery is attempted, then the staff and hospital have the key to the nutritional problem in its most practical phase. When the obsolete diet lists and texts are thrown out then our aging patients will get the protein they need, together with a *balanced* natural selection; omnivorousness is the goal.

(c) A gastric or bowel cancer patient has early used up his fleeting carbohydrate stores. With a priority system far more expeditious and automatic than that of any "new deal," the body starts out to conserve protein by shifting to a release of energy from stored fat. For a time living on this "money in the bank" is possible, but hazardous. The liver loads up with fat, and does so doubly certainly if the patient is either an alcoholic or has congestive circulatory failure. Sooner or later he lives on his invested capital—his tissue protein—if for no other reason than to get its content of glucose for muscle contraction. It is not long before the liver fails in synthesizing the blood and tissue fluid proteins. Edema easily supervenes. Homeostatic equilibrium is challenged on every side. Under these circumstances postoperative complications (always multiplied with the elderly) devestatingly obtrude. The hypoproteinemia inhibits wound healing and mixed avitaminoses incite bleeding.

(d) Here enters the hospital laboratory and blood bank. Immature as much of our testing for and knowledge of malnutrition is known to be, still relatively simple tests develop understanding and help decide the methods and agents (whole blood, electrolytes, plasma, serum and parenteral amino acids) needed. Then the normal route of ingestion must not be forgotten. Few patients are unable to take large amounts of milk powder (casein), gelatin, egg, and other pabulum rich in protein. Wangensteen's meth-

od of accurately weighing his bed patients daily is the best device to know where the patient stands in terms of his protein economy and water balance.

(e) The less dramatic nutritional imbalances, which are so obviously a part of many disorders calling for hospitalization, have been mentioned so commonly that repetition is not called for here.

There are the postinfectious sequelæ, some of them the result of the therapy itself, as in pneumonia or the various fevers. Pregnancy provides certain baffling anemias. Some elderly people, "living off a shelf," have low blood levels which a high protein diet, with or without hydrochloric acid and thyroid extract, will promptly rehabilitate. Peters has recently elaborated upon this in his article on "A New Frame for Metabolism."[3] This throws much light upon how the body puts into play its food priorities. One learns from it the meaning of "starvation diabetes," and, indirectly, that as the liver is allowed its quota of storage glycogen, so all vital functions prevail and prosper. Many elderly diabetics are out of dietary balance and adjustment under guidance is their chief need.

(f) Since we have life extension—almost superabundantly—it is incumbent upon physicians to teach people how to retain as much vigor and self-sufficiency as possible. Their aim is indeed: "To add more life to the years rather than more years to life." The hospital laboratories and departments of dietetics greatly aid in this objective.

(g) For a long time it was not fashionable to admit having a good appetite. The iniquitous coffee and slice of toast breakfast became the vogue. Start the day with a good breakfast.[7] Add eggs, ham, bacon, fish or a chop (after the war) to your coffee, orange juice and toast. Carry this habit into your old age. You will be prepared to withstand its vicissitudes.

(h) Underweight and obesity provide challenging problems for dietitians. Many underweight individuals are still well nourished; it is somewhat startling to realize that many of the obese are malnourished. More than a superficial analysis is necessary to understand all that these statements connote. The obese individual placed upon a reduction diet automatically enters upon a period of utilizing the stored fat and may be quite uncomfortable because of the switch to a "high fat diet." While it is a disaster for a growing child to lack at any period "the essential fatty acids," there is a growing feeling of uncertainty in terms of how inadequately some in the older age group "disperse cholesterol." Dietitians are quite familiar with the close relationship between diabetes and arterial decay and its most vicious regional implant, namely within the coronaries. There is among the elderly, therefore, much more need to be conservative in the intake of fat than to be limited in the ingestion of protein.

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USE OF BORIC ACID OINTMENT ON BURNS IS DANGEROUS

A warning against the use of boric acid ointment or saturated solution on burns was given by Lieut. Carl C. Pfeiffer, Ensign Lois F. Hallman and Lieut. I. Gersh, of the U. S. Navy at the meeting of the American Medical Association.

Enough boric acid to produce poisoning can be absorbed from 10 per cent boric acid ointment, they found. As much as 75 per cent may be absorbed when a 5 per cent solution is used to wash out body cavities. Repeated doses result in the acid being deposited in the brain, fat and liver. Death results from a shock-like syndrome after large doses and from general inanition after medium doses.

After the Cocoanut Grove disaster in Boston, when boric acid ointment was used under pressure dressings on the victims' burns, the National Research Council issued an official recommendation for its use on burns, but this has since been withdrawn.

Since boric acid is a weak antiseptic, the Navy officers suggest use of more active and less potentially harmful ones.—*Science News Letter,* July 15, 1944.

THE RELATIONSHIP OF DESCENSUS UTERI TO PELVIC SIZE AND MORPHOLOGY AND TO CERTAIN OBSTETRIC AND ECONOMIC FACTORS

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IT IS generally taught that most uterine prolapses originate from childbirth injuries. That this is not the sole factor in the production of various degrees of prolapsus uteri is demonstrated by the occasional nullipara and perhaps the occasional multipara who presents a prolapsus without any other evidence of pelvic relaxation. At least some of these, as with the instances of urinary incontinence without anatomical urethral sphincter relaxation, must be of neurogenic origin, although few present spina bifida or other evidence of neurologic lesions. There are undoubtedly many and perhaps varied etiological factors in the production of descensus uteri. For instance, obvious differences have been observed in the white and colored races.

Everett[5] comments on the relative rarity of conditions requiring vaginal plastic work in the colored patient at the Johns Hopkins Hospital. Indeed, in reporting on the end-results from one operative procedure for uterine prolapse and cystocele, he records that only eight of sixty-eight patients were Negro and this is from a service in which the colored patients outnumber the white by almost two to one. This colored clientele is known to have small pelves, many with rickets, and they are prolific, giving birth to about average-sized fetuses with not infrequent dystocia. They live in crowded residential quarters, are not well fed and work chiefly as domestics. On the gynecological ward of the University of Minnesota Hospital, on the other hand, there are many patients admitted for repair of birth trauma. They come from a hardy stock, many Scandinavian, chiefly rural, whose babies are above average in size, but in whom pelvic dystocia is rare. These differences probably exist between other races or groups.

The present study was undertaken in an attempt to determine, if possible, the role played by pelvic size and morphology in the production of prolapsus uteri. Simultaneously, the obstetrical histories and social or economic statuses were analyzed. Early in the study it became apparent that the available material fitted a fairly uniform pattern, so the study was terminated with the twenty-fifth patient.

Consecutive cases were selected and included all admitted to the service with some degree of prolapsus uteri or with a third degree descensus. Lesser degrees of descensus uteri were not included. Each was subjected to stereoscopic roentgen pelvimetry and to clinical mensuration of the pelvis before operation. Pelvic morphology was described according to the standards and classification of Caldwell and his coworkers.[1] Roentgen mensuration was carried out on the stereoscopic anteroposterior and lateral films by the "precision" method now routinely used for obstetrical pelvimetry in this clinic and which has previously been described.[3]

The distribution of the material according to extent of descensus or prolapsus uteri, associated pelvic relaxations, and extragenital diseases, is shown in Tables I, II, and III, respectively. Third degree descensus was diagnosed when the cervix, upon straining or with traction upon it, came to the vulvar outlet; first degree prolapsus, just beyond the outlet and complete prolapse or procidentia upon complete delivery of the corpus uteri.

Only one patient had no associated pelvic relaxation and she was a fifty-six-year-old spinster with third degree descensus who had spent much of her life doing heavy housework and caring for an invalid relative. Three years before admission she had had a colpoperineorrhaphy because of a first degree descensus which was thought to have been present for twelve years. One-half of the patients had associated hypertensive cardio-vascular disease. In only a few of these was that disease severe, but it was never considered a contraindication to vaginal plastic procedures since all these operations are performed under local anesthesia.

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TABLE I. EXTENT OF DESCENSUS OR PROLAPSUS UTERI

Degree of Descent	Patients	
	No.	Per Cent
Third degree descensus	12	48
First degree prolapsus	8	32
Complete prolapse	5	20
Total	25	100

TABLE II. ASSOCIATED PELVIC RELAXATIONS

Relaxations	No.	Patients
None	1	
Cystocele and rectocele	24	
Plus enterocele		3
Plus retroversion of uterus		2
Plus myomata uteri		2
Plus adenomyosis		1
Plus cervical hypertrophy		9
Plus urinary incontinence		18
Total	25	

TABLE III. EXTRAGENITAL DISEASES

Disease	No. Patients
Hypertensive cardio-vascular	12
Microcytic hypochromic anemia	1
Diabetes	1
Umbilical hernia	2
None	9
Total	25

TABLE IV. ROENTGEN DIAGNOSIS OF PELVIC SIZE

Pelvic Size	Patients	
	No.	Per Cent
Above average or large	10	40
Average or normal	14	56
Borderline	1	4
Total	25	100

TABLE V. MORPHOLOGICAL TYPES OF PELVES

Gynecoid		14
pure	11	
with narrow forepelvis	2	
with android tendency	1	
Platypelloid		10
pure	4	
with gynecoid tendency	6	
Android		1
with gynecoid tendency	1	
Total		25

The age range of patients at the time of onset of symptoms or signs of descensus uteri and the age at the time of hospitalization for therapy are given in Figure 1. The average age at the time of appearance of descensus uteri was 42.8 years with extremes of twenty-one and sixty-three years. Age *per se*, then, does not appear to be a factor in the production of descensus uteri. Neither is age at the time of delivery of the first term pregnancy a factor for at that time 20 per cent of the patients were fifteen to nineteen years old, 60 per cent were twenty to twenty-four years, 4 per cent, twenty-five to twenty-nine years, and 12 per cent, thirty to thirty-four years. These patients ranged between twenty-four and sixty-four years in age when admitted for therapy with an average admission age of 53.9 years. The average duration of symptoms before hospitalization was 11.5 years with extremes of one and thirty-nine years.

Clinically, all pelves which were completely measured (twenty) were found to be normal in size. The x-ray determination of pelvic size is given in Table IV where it will be seen that not a single pelvis could be classified as contracted and only one was borderline in size, all others being normal to large. None was considered obstetrically undesirable. The borderline pelvis was pure platypelloid in type with measurements slightly below normal—greatest transverse diameter of inlet 13.1 cm., ischial spinous diameter 10.3 cm., intertuberous diameter 10.0 cm. and obstetrical conjugate 9.3 cm. She was a para 9-1-2-6* who had had two forceps deliveries and one breach extraction with all three of these being stillborn or dying within seven hours of birth. One of these weighed more than eight pounds. No other data is available but all must be considered obstetrical accidents. Average important measurements for this whole group with their accepted normals in brackets were: transverse of inlet 14.0 cm. (13.5), ischial spinous 10.8 cm. (10.5), intertuberous 11.7 cm. (greater than 10.0), obstetrical conjugate 11.3 cm. (at least 11.0 for all pelvic types except platypelloid in in which 10.0 is accepted) and C.D. 12.8 cm. (11.75).

The morphological types of pelves observed in these patients are given in Table V. Caldwell and Moloy's classification[1] was used and the table

*Nine term deliveries, one premature delivery, two abortions, and six living children.

includes parent and mixed types of which there were fifteen patients with pure and ten with mixed types. There were no anthropoid pelves which may not be surprising since these patients

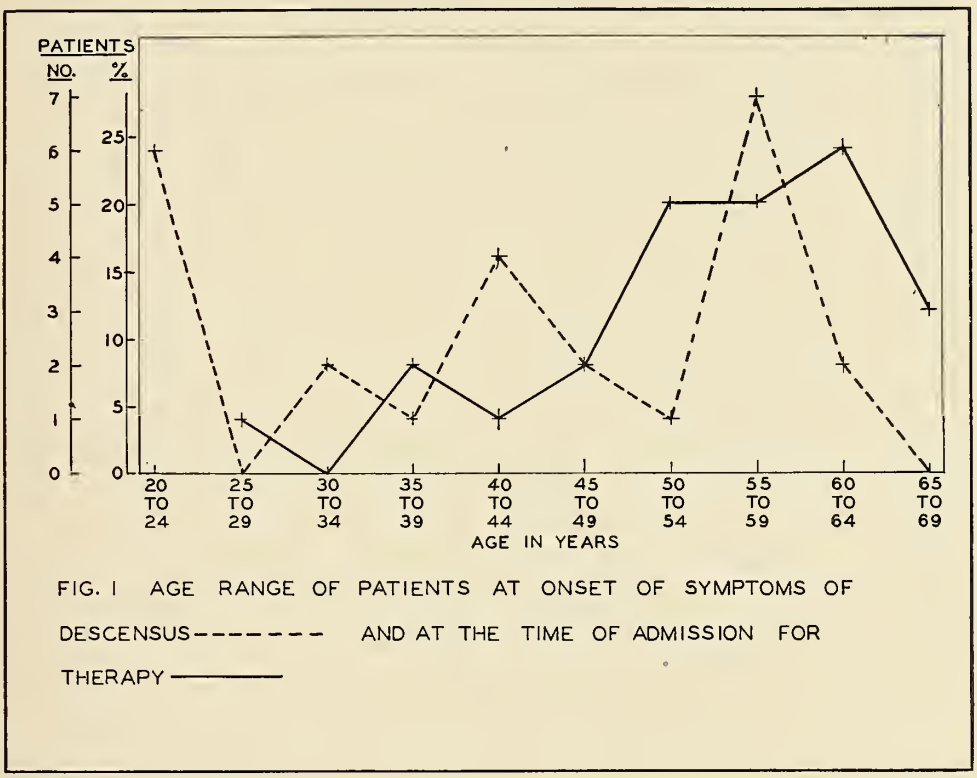


FIG. 1 AGE RANGE OF PATIENTS AT ONSET OF SYMPTOMS OF DESCENSUS- - - - - - - AND AT THE TIME OF ADMISSION FOR THERAPY ————

were all from low-income levels and Thoms and Greulich[8] have shown that the incidence of pure and primary anthropoid pelves is higher in those patients from the upper social and economic strata. It may be significant that no pure and only one primary android pelvis appeared. Moreover, only one other pelvis showed secondary android characteristics.

Roentgenologic findings other than pelvic form included nine cases in which there was certain, though never marked, rickets. This diagnosis was made in each case on the basis of the typical disturbances in the curvatures of the sacrum. In a few instances rachitic changes in the pelvis other than in the sacrum were noted but were never as outspoken as in the sacrum. Four pelves showed high assimilation. One was slightly asymetrical but classified instead according to the other parent-type characteristics found in it. There were no instances of spina bifida. However, in six the hiatus sacralis involved the lower two or three sacral vertebræ. According to anatomy texts[2,6] the lower part of the posterior wall of the sacral canal is deficient owing to the absence of laminæ and spine of the fifth vertebra always and, very often, of the fourth also. In two of our six cases, the third sacral vertebra was similarly deficient. The significance of these minor developmental anomalies in the lower end of the vertebral column is not known. It would seem possible that they might be associated with other anomalies in development of the neural canal which cannot be recognized clinically or roentgenologically but which might conceivably be, like spina bifida, responsible for the production of pelvic relaxations on a neurogenic basis.

Age of the patient at the time of the menopause was compared with data supplied by Novak[7] on normal menopause in a group of Baltimore women. The average age of our patients at the menopause was 48.27 years with extremes of thirty and sixty-three years. Five in the group studied had not reached the menopause and at the time of admission for therapy were twenty-four, thirty-five, thirty-seven, forty-four and forty-five years of age. The extremes in Novak's series were twenty-seven and fifty-four years. Except for a higher incidence in our older age

group there is no significant difference between the two series.

Parity of the patients at the time of onset of symptoms of descensus uteri and at the time of admission for therapy were investigated. Seven patients changed parity status between these two events. Each of three had two subsequent pregnancies and one each had one, four, six, and seven term pregnancies subsequent to the development of symptoms of descensus uteri but before repair procedures were undertaken. The twenty-four parous women had 127 term or near term deliveries for an average of 5.29 viable children but they had only 103 or an average of 4.29 before the onset of symptoms. Everett[5] does not make these distinctions but notes that the average number of term deliveries in his series of sixty-eight was 4.3 including one nullipara and four patients who had ten or more children.

Operative vaginal deliveries were not found to be important factors in the production of descensus uteri. One patient was a nullipara. Of the remaining twenty-four parous women, thirteen had twenty-one operative deliveries before the onset of symptoms and a total of twenty-seven before hospitalization for treatment of descensus or prolapsus. Only three patients changed status with respect to operative deliveries and they had one, two and three forceps deliveries respectively followng the onset of symptoms. All operations were forceps deliveries, none identifiable as to type, except for two which were breech extractions.

Graphs of physical build of this group of patients in terms of weights at the time of the menopause and at the time of hospitalization were made. These were based on standard insurance weights[4] for their respective heights and ages. They were expressed in terms of percentages of the average for sex, age, and height. Deviations of 20 per cent from the averages were considered within normal range which is the range adopted by insurance companies.[4] On these graphs it was found that the majority of the women in this study fell within the normal limits for stature and there was no preponderance of over or underweight individuals. The overweight individuals represented greater percentages of deviation from the normal than did the underweight ones. The distribution was equal on both sides of the average value.

The operative procedures carried out in treatment of these cases of descensus and prolapsus are listed in Table VI. The operation of choice has been colpoperineorrhaphy with ventral fixation but in slightly more than one-half of the cases other operative procedures were elected because of diseases of uterine corpus or cervix or because of the apparent impossibility of sufficient mobilization of the uterus to allow fixation to the anterior abdominal wall. No attempt has been made to evaluate the adequacy of these various procedures since the postoperative follow-up period in many has been too brief for an accurate analysis.

TABLE VI. OPERATIVE PROCEDURES CARRIED OUT IN TREATMENT OF PROLAPSUS UTERI

Procedure	No. Patients
Colpoperineorrhaphy alone	2
with interposition operation	3
with vaginal hysterectomy	3
with ventral fixation	11
with cardinal ligament shortening	5
Pending	1
Total	25

The economic status of this group of patients was determined in order to evaluate the type and amount of physical activity indulged in before appearance of symptoms of descensus. All were ward patients on a service with a ward to private patient ratio of 7:1 and had done considerable hard work. Nine had done all ordinary household duties as housewives for small to large families. This did not include regular help with these labors and the majority returned to their duties within one week of the time of delivery.

The nullipara had for many years cared for an invalid relative and this necessitated lifting a heavy adult as well as heavy household duties in a home without any modern conveniences. The remaining fifteen had lived on farms where their duties included not only above average household tasks that necessitated heavy lifting but also had worked in the fields at labors generally done by men. The relatively few admissions on the private service for repair of prolapsus have been notable. Excessive physical activities including heavy lifting and especially after brief puerperia before supporting structures have had an opportunity to involute would seem to be an important factor in the production of descensus uteri.

Conclusions

1. To determine the possible relationship of pelvic size and form to the development of descensus uteri, twenty-five consecutive admissions for repair of third degree descensus uteri or of prolapsus were subjected to complete roentgen pelvimetric study. Evaluation of stature, menstrual and obstetrical histories, and of economic status are included.

2. The following factors do not appear to play a role in the production of descensus uteri; age at onset of symptoms, age at time of first term delivery, age at menopause, parity before onset of symptoms, number of operative vaginal deliveries, and presence of open sacral canal.

3. Parity with associated birth trauma is almost always an accompaniment of descensus or prolapse.

4. Undesirable obstetrical pelves from the point of view of either size or morphology were not found associated with descensus.

5. Descensus uteri is much more common in low income group patients.

6. Hard physical labor especially when resumed shortly after delivery is probably an important factor in the subsequent appearance of descensus or prolapsus.

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ORIENTAL DISEASES

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IT is high time that the medical profession begins to do more thinking along the lines of Oriental medicine. For this reason this work has been prepared in the hope that my experience treating large numbers of Chinese in the middle of the Honan Province of China between the years of 1931 and 1942 will stimulate your interest in this field of medicine. As a medical missionary I prepared myself for the work by taking a summer course in Oriental diseases at Peking, China, using textbooks on Oriental medicine by Manson-Bahr and later by Stitt. It must be understood that I was located on the frontier of medicine. There were no laboratory facilities except for what little I had time for and consequently much of my therapy was by trial and error. I will limit my discussion to two groups of diseases, first, malaria and kala azar, and second, the dysenteries, amebic and bacillary.

Upon finding the relationship between the mosquito and malaria Ronald Ross wrote: "This day, relenting, God has placed within my hand a wondrous thing, and God be Praised, at His command seeking His secret deeds, with tears and toiling breath I find thy cunning seeds, O million murdering death!"

The clinical manifestations of malaria are as varied as is possible in any one disease. Many individuals may harbor the malarial parasites and not present any clinical manifestations, or merely show general malaise, headaches and mild manifestations of very little importance. There is a selective localization of parasites in the blood-forming organs, including the bone marrow, spleen and liver, causing cloudy swelling, fatty degeneration and even infarction in these organs. The same occlusion of capillaries has been demonstrated associated with small hemorrhages in the brain, meninges, heart, gastro-intestinal tract, kidneys, pancreas, thyroid, lungs and adrenals.[7] If these pathological manifestations are unusually severe in any of these various organs the clinical manifestations may be correspondingly outstanding even to the point of greatly confusing the physician and making the diagnosis difficult. Cerebral malaria with coma is a good example

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of this type. In one such case I obtained a history of malaria and gave a large dose of quinine intravenously with good results. If the parasites are in the bronchial tree they may cause asthmatic symptoms. Cardiac symptoms sometimes are predominant and on other occasions where the intestinal mucosa is primarily involved the patient may suffer from diarrhea and thus his condition may be diagnosed as dysentery.

The typical picture of tertian and quartan malaria begins with malaise, headache, chills every two or three days at which time the pulse rate and blood pressure are raised as well as the temperature. The chills last from twenty to sixty minutes associated with profuse sweating, fever crisis followed by a feeling of well-being. Other common symptoms include frequency of urination, nausea and vomiting. It is entirely possible that our soldiers may show a very different and bizarre clinical picture as compared with the classical malaria which I generally found in the Chinese soldiers who may have some immunity to the disease. In the subtertian type of malaria the chills were not so severe and fever was irregular. Here marked prostration was characteristic and there was no feeling of well being between the attacks as found in the other regular types of malaria.

Malarial cachexia is frequent in the Orient. These patients become very anemic. I have prescribed 100 quinine and 100 iron pills to such cachetic women which to their great joy results in their resumption of menses and the possibility of their giving birth to a Chinese boy.

It must be remembered that tropical diseases have a special tendency to result in a positive Wassermann and Kahn test. Some authorities state that as high as 80 per cent of malaria patients sometime or other have a positive Wassermann or Kahn test.[7] Other tropical diseases often giving biologically false positive syphillis tests[3] are yaws, (over 80 per cent), mal del pinto (75 per cent of cases), bejel (Syria) leprosy (40-50 per cent of cases), recurrent fever, leishmaniasis, and trypanosomiasis.

Many authorities agree that there may be a natural immunity against malaria and that an active immunity must be worked up by the body against the disease. I have, for example, seen missionaries living under identical conditions and equally exposed to the mosquito, one suffering violent chills and malaria symptoms while the other may go for years without any signs of attack.

Treatment.—Prophylactic or suppressive treatment includes the giving of small doses of quinine or atabrine during the week. The United States Army is using 0.1 gram atabrine six days a week for suppressive treatment in some regions while 0.1 gram b.i.d. on the first and fourth days of each week is used in other regions. In China we have often used 12 to 20 grs. of quinine on Monday and Tuesday of each week, thus interrupting the five-day cycle of germination of the malaria germ. Prophylactic therapy seems to keep away the clinical symptoms and must be resorted to, for example, when armies are on the march. Yet there is danger expected with this form of treatment.[7] It may mask symptoms while the infecting plasmodia insidiously do their damage in the blood-forming organs and deeper structures. The natural defense mechanism may be impaired by the therapy and a serious attack of the disease may be precipitated. This is also the underlying idea of the term "quinine fast," when we were warned against treating malaria with too small a dosage.

We are still looking for the ideal drug in malaria. Some cases respond to quinine and some to atabrine and others to a combined treatment. Quinine and atabrine both destroy schizonts or asexual forms. Plasmoquin is used for the sexual or nonclinical forms (gametocytes). The army dosage[2] of quinine used therapeutically for malaria is grs. XV t.i.d., p.c. for two days, then grs. X t.i.d., p.c. for five days. This may be given intravenously in 400 c.c. of water. The dosage of atabrine is gr. III, q. six hours for five doses, then grs. 1½ t.i.d., p.c. Atabrine may be given intramuscularly in 5 c.c. of water. One-third of the atabrine patients become yellow. They see yellow and have yellow urine. Atabrine poisoning is manifested by nausea, abdominal cramps, headache, diarrhea and depression or other mental symptoms. Atabrine, an acridine dye, may damage the liver and should be used with caution in the presence of liver disease. We used it in China in normal obstetrical cases having malaria. Neosalvarsan not only has a tonic value appreciated by many but also appears to cure some cases of malaria.

I would like to point out that in 1870 there was a committee from the American Medical As-

sociation which advised the United States government to grow quinine trees in Southern California, Arizona and New Mexico. This advice was unfortunately tabled. What this shortsightedness will cost our nation in lives and possibly battles only the future will know.

A typical case of kala azar or leishmania Donovani might be a boy of from ten to twelve years of age with a protruding abdomen and with a greatly enlarged spleen. He often has sores about his mouth and on his legs. Generally he has bronchitis, a pasty anemic complexion as well as a thin blood. There is a marked leukopenia. This disease is caused by a protozoan organism. They are found in the endothelial cells lining blood and lymph vessels, especially in the spleen, liver and bone marrow. A sternal puncture using a stout, short needle is used to find the organisms and establish a diagnosis. I accidentally developed my own method of finding the organisms. One day while in a hurry I dropped a little Wright's stain on a thick blood smear and examined it under oil immediately. I found the organisms moving about and thus I was certain I wasn't looking at any misleading precipitates. The liver is often enlarged and the fever is characterized by a double or triple peak of fever in twenty-four hours. There may be two to six weeks of remissions of afebrile periods.

Ninety per cent of the patients who receive no treatment die in from two months to two years. Neostam and neostiboson are specific drugs for this disease to which the patient responds if he does not come too late. Treatments may have to be repeated after a rest period. Neostam or neostiboson 1.5 to 2.5 grams for children, 4 to 5 grams for adults given over a three- to four-week period, preferably parenterally, is advised. In India and Assam a similar drug is called ureastibamine. Tropical sores are often related to leishmania Donovani and respond to the treatment with these drugs. Certain types of cancrum oris seem often to be associated with leishmania. In these cases I like to supplement the specific drugs with vitamins. Sulfonamide powder is also said to be good.

The dysenteries are indeed common in the Orient and many of our returning soldiers may be discharged from the Armed Forces only to later develop clinical manifestations of these diseases. Incidentally it is variously estimated that from 5 to 20 per cent of the population of the United States are infested with entameba histolytica. Many of these victims are carriers and may have no special clinical manifestations. The typical cases of amebic dysentery as I saw them in China had a rather slow onset with moderate tenesmus, gradual appearance of blood in the stool, low grade toxemia and dehydration, rarely liver and pulmonary involvement and rarely perforation. Whereas the cases of bacillary dysentery had a sudden onset of their diarrhea generally with severe tenesmus and early appearance of blood and ulcerations and very rarely perforations as compared with the amebic dysentery. Toxemia and dehydration were more marked and there was no abscess formation in the liver or lungs. The therapeutic use of emetin was also a means of differentiation of the two conditions. A great many victims of amebic dysentery suffered from nothing more than vague abdominal pains. Yet an examination of the stools with eosin-iodine stain revealed the amebic cyst.

Two groups of drugs were used for amebic dysentery including, first, the arsenicals: treparsol, carbarsone, and stovarsol. The other group were the oxyquinolines, including yatren, vioform and diodoquin. I preferred the carbarsone, 4 grs. b.i.d. for ten days to begin the treatment. Emetin was simultaneously given by deep subcutaneous injection 8 to 10 grs. over a ten-day period. According to Beckman[1] ⅔ gr. b.i.d. for three days is advisable at the beginning of treatment. I have seen one reaction to emetin so I prefer to interrupt the treatment every three or four days if a high dosage is being used. Many authorities believe that no further emetin should be given until after a six- to eight-week rest period. In case of an amebic liver abscess, however, it may be necessary to resume a course of emetin after a ten-day rest period. Following the carbarsone by mouth it is well to rest ten days, then give a ten day treatment of oxyquinoline, again interrupting ten days and terminating with carbarsone for ten days.[1] Yatren 2.5 per cent in 300 c.c. retention enemas and ipecac bismuth combinations by mouth are supplementary methods. A low residual diet is advisable and the patient receiving emetin should be hospitalized.

For bacillary dysentery succinylsulfathiazole is the latest promising drug. Even in high dosage a concentration of not more than 2 mgs. per cent may be found in the blood. Even with this low concentration, however, there may be toxic re-

actions. Twenty cases were reported as responding well to this drug.[4] In a group of fourteen children with Flexners dysentery bacillus infection there were abdominal cramps and vomiting during the first twenty-four hours with temperatures reaching 100 to 104 degrees.[6] After four days of treatment 90 per cent of the children were apparently cured. The drug is less effective in chronic and recurrent forms.

Summary

1. We may expect a number of our soldiers and sailors to return to their homes in apparent health only to break down, generally after prolonged chilling or fatigue, with malaria or dysentery in bizarre and atypical clinical manifestations as well as in the typical forms.

2. The great difficulty of finding the specific organisms of malaria and dysentery (especially the latter), in some cases renders a trial of specific therapy justifiable.

3. Caution is expressed in the interpretation of a positive Wassermann, Kline or Kahn test in patients who may have some oriental disease.

4. There exists a danger of transmission of malaria in blood or plasma transfusions.

5. Prophylactic or suppressive treatment may mask a deep-seated insidious malarial process which may later prove very difficult to control.

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WAR AND PESTILENCE

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INASMUCH as we are in the midst of the most widespread and greatest war in all history, the subject of the relation of disease to war should be of medical interest. It will be my purpose to show how pestilence among troops and spread by troops to civilian populations has been more devastating throughout world history than actual warfare with the possible exception in the case of the Russo-Japanese war. The relation of disease to the present conflict will also be briefly considered.

To go back to the Peloponesian war between Sparta and Athens which began in 430 B.C., Athens was at its height of power and civilization at the period known as the Golden age of Pericles. She controlled the Mediterranean and enjoyed an extensive commerce with the countries bordering on the Mediterranean. This was the period when literature, philosophy and art flourished in Athens. Sparta declared war on Athens in 430 B.C. and besieged the city. Some 200,000 people from the surrounding country crowded into the city of Athens, normally a city of 200,000. Pestilence spread in the city. The only description we have of the disease is that of Thucydides who was not a physician. He described the affected as suffering from thirst, their bodies red and livid and marked all over with pustules and sores. He did not describe buboes and from the description the disease may have been smallpox but historians believe it was probably bubonic plague. The Spartans feared to enter the city on account of the plague and retired, not, however, before Athens was disrupted by the pestilence. Later Pericles and members of his family died of the disease and Athens was sacked and there can be no doubt but that pestilence contributed largely to the downfall of the Athenian power and civilization.

Smallpox. Medical historians believe that smallpox had its native habitat in central Africa and in India. It may have been the pestilence that played such havoc with Athens, having been transmitted to Athens from Africa through commercial routes. History relates that in 164 A.D.

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the Parthians attacked Syria and the Roman Emperor Marcus Aurelius Antoninus sent his general, Avidus Cassius, with an army to Syria. A few days after the triumphant march of the returned troops through the streets of Rome an epidemic broke out among the soldiers. The disease raged for fifteen years and in a later campaign against the barbarian Marcomanni, Marcus Aurelius himself died of the disease on the outskirts of what is now Vienna. From the description given by Galen who was Aurelius' physician, the disease was probably smallpox.

Smallpox was first reported in America only fifteen years after its discovery. In 1520 the Spaniards carried the disease into Mexico and some three million natives are said to have died of the disease.

Smallpox first appeared in Boston in 1649. In 1775 after the battle of Bunker Hill the disease broke out among the British troops which were occupying the city. Neither the colonial forces under Washington which were besieging the city nor Howe, in command of the British troops, chose to attack, probably because of the epidemic. After the British evacuated the city Washington permitted only 1,000 of his troops who had had smallpox to enter the city. The British army at that time had adopted the practice of inoculation with smallpox quite different from vaccination, in that material from a pustule from a mild case of smallpox was inoculated into the skin of the individual and it may have been that the 2,000 of Howe's troops sick with smallpox might well have included those who had been inoculated.

The story of the development of vaccination against smallpox is interesting and merits a recital. In 1716 Lady Mary Montague while in Constantinople had her three-year-old son inoculated from a mild case of smallpox. Evidently this was not an unusual practice in the near East at that time. Following this the Prince of Wales had his two children inoculated after trying the procedure on six condemned criminals.

During an epidemic of smallpox in Boston in 1721, Cotton Mather, a Boston physician, read of the procedure in the Transactions of the Royal Society of London and wrote articles advocating inoculation and published them in the newspapers. Dr. Zabdiel Boylston of Boston was much impressed and tried it on two negro slaves and his son.

Before the Revolution the state of Virginia had enacted a penal law prohibiting smallpox inoculation. As a result of unfavorable experience with smallpox among his troops, Washington challenged the law and adopted inoculation for his troops with good results.

At the time of Charles II of England, Barbara Villiers (the Duchess of Cleveland), a notorious but beautiful woman in his court, was asked whether she was not afraid she would contract smallpox and becoming disfigured lose her influence with the King. She is said to have stated she had no such fear because she had had cow pox. One hundred years later Edward Jenner heard a young woman make the same statement and investigated. He was a pupil of John Hunter and is said to have told his preceptor that he thought smallpox and cow pox were the same disease. Hunter made the famous statement: "Don't think, try! Be patient. Be accurate." Later in 1796 Jenner vaccinated John Phipps with cow pox and was unable to inoculate him later with smallpox. Later he repeated the experiment with three others and proved them immune. The Royal Society refusing him publication of his observations, in 1798 he published them in pamphlet form.

In America, Dr. Benjamin Waterhouse of Boston published an article in a newspaper entitled "Something Curious in the Medical Line" after hearing of Jenner's work. Later he secured some virus, vaccinated his own children and sent some virus to President Jefferson who vaccinated members of his family.

In May, 1776, the colonial troops under Benedict Arnold and Montgomery invaded Canada and besieged Quebec. During the siege 900 of the 2,000 colonials became sick for the most part from smallpox which forced their retirement. Who knows to what extent Canadian history was affected by this epidemic of smallpox.

In 1779 while the British were occupied in America the combined French and Spanish fleets sailed into the British Channel where they encountered no resistance. Before, however, the boats could land on England's shore an epidemic of smallpox attacked the sailors. Half of the personnel was affected. A storm arose which blew the nearly helpless fleet 100 miles out into the Atlantic ocean. Never was England nearer invasion even from the Spanish Armada, Napoleon or following Dunkirk. Who knows how

much English history might have been altered had it not been for this epidemic of smallpox.

Smallpox had been a most serious scourge of humanity before vaccination was discovered. Aside from epidemics it was endemic year after year and took a frightful toll in life and disfigurement. That it played a lesser roll in military campaigns was due to the fact that it attacked minors and most adults had had the disease before they reached army age.

Bubonic plague commonly known as the Plague or the Black Death has probably exacted a greater toll of human lives than any other pestilence.

Guy de Chauliac, an Italian physician and surgeon, has given us a good description of the pneumonic and bubonic types of the plague as it appeared in Italy in 1348. It was brought by rat-infested boats from the Near East to Sicily and thence to Italy. He himself contracted the disease but recovered and later wrote his Great Surgery which was to become authoritative for three centuries.

The introduction to Boccaccio's Decameron gives a vivid description of the plague in Florence. The book, as you doubtless know, is a collection of very sexy stories supposed to have been told by seven pretty young girls and three youths to while away their time on a house party at a castle outside of Florence, Italy, whither they had fled from Florence to escape the plague. The lowering of morals which accompanied and resulted from the plague is also well described in the introduction to this volume.

Millions died of the plague in India and China during the fourteenth century. It spread from Italy into Germany, Russia, Holland, France and to England. In the province of Venice more than 100,000 died; likewise in London; some 60,000 in Florence and 500 daily for a time in Paris. It was responsible for a lowering of moral tone throughout Europe, social and economic changes and eventually was followed by the Reformation.

The plague was present yearly in London from 1603 to 1665. The latter date was that of the Great Plague of London. Not knowing the relation of the rat and the rat flea to the spread of the disease the Mayor of London decreed that all dogs and cats as well as rats should be killed. Some 40,000 dogs and 200,000 cats, the natural enemies of the rat, were sacrificed. The Great Fire of London in 1665 put an end to the plague. Samuel Pepys in his famous diary recorded June 10, 1665 as the day the Great Plague began in London.

In 1630 over 500,000 died of the plague in the Venetian Republic. Competent authorities attribute the downfall of the Republic to the plague.

In 1636 the plague reached the Tyrol. The famous Passion Play of Oberammergau given each ten years since, is the fulfillment of a vow made by the citizens of that small community when they were spared further ravages.

One of Napoleon's early campaigns was that into Africa. He conquered Egypt but his return to France was cut off by Nelson's defeat of the French navy at Aboukir. Forced to press on to Syria he failed to capture St. John of Acre located near Jerusalem. The city was enabled to hold out when the British Admiral Smith supplied the city with food. Bubonic plague broke out among the French forces. Napoleon is said to have visited the hospitals, encouraged his men and actually picked up one of his soldiers sick of the plague and carried him back to his room to show his contempt for the disease. His physician, Dr. Desgennettes, to strengthen the morale of the troops, is said to have pricked a bubo and scratched his arm with the same needle. His failure to contract the disease is supposed to have demonstrated the effectiveness of his remedies. Not knowing the mode of transmission of the disease this procedure must have required considerable courage.

Typhus has exacted a terrible toll in Europe during the past four centuries. It was first described by the Italian physician Cardan who was born in 1501 and practiced in Milan.

In 1528 Charles V, King of Spain, sent an army into Italy under Philibert, Prince of Orange. This force conquered northern Italy and occupied Naples. It was decimated by disease. Francis I of France sent an army of 25,000 to rescue Naples but the attempt failed when spotted fever broke out among the troops and reduced their number to 4,000. As a result Naples remained a Spanish possession for two centuries.

In 1544 an army under Joachim of Brandenburg besieged Budapest then held by the Turks. He lost 30,000 soldiers from spotted fever and was forced to retreat. Budapest as a result re-

mained in the hands of the Turks for nearly 150 years more.

During the Thirty Years' war in the 17th century, Wallenstein's army carried the Hungarian Disease (typhus) into northern Germany. By the end of the war three quarters of the population of Germany had died. When the disease invaded Holland, Leyden lost 10,000 and Amsterdam 12,000. During this period England was spared and medicine and science flourished.

Napoleon's failure to conquer Russia was largely contributed to by typhus and typhoid. He set out for Russia with a force of 363,000 men, one third French and the rest Germans, Austrians. Poles and Italians. Inside of three months 80,000 were sick of typhus, typhoid and dysentery.

In his memoirs the French sergeant, Bourgoyne, tells of the prevalence of body lice amongst the troops. Some 80,000 of Napoleon's troops left the burned city of Moscow, only 20,000 of which reached France. Typhus and related diseases contributed largely to the catastrophy of Napoleon's invasion of Russia.

During the Crimean War which began in 1854, the English troops suffered terribly from typhus fever. Nursing of sick soldiers up to that time had been left to privates, with no training in sanitation, detailed to care for their sick fellows. Reading of the deplorable condition and the high death rate in the English military hospital at Scutari, across the Bosphorus from Constantinople, the English nurse, Florence Nightingale, at the head of a corps of nurses had the moral and physical courage to offer her services. The death rate in the hospital at Scutari was 427 per 1,000 in February but after her arrival was reduced to 107 in April and only twenty-two in June. She described the infestation of the hospital with vermin and proved the importance of sanitation. The English and their allies lost 50,000 men in the Crimean war from disease and 2,000 from bullets.

It was typhus that played such havoc in Serbia in 1914. It first appeared in the Serbian army in November, 1914. Inside of six months one fourth of the Serbian army had died. Before the war was over 300,000 Serbs, one-tenth of the Serbian population had perished. Hans Zinsser stated that typhus may not have won the world war but it certainly helped.

Typhoid fever enacted a greater toll in the American army during the Spanish-American War than did bullets. During the war there were some 14,000 cases of typhoid in the camps. Twenty per cent of the American troops in Cuba were sick from typhoid, dysentery, malaria and yellow fever. Statistics showed that twenty-nine officers and 440 privates were killed in action while sixty-seven officers and 1,872 men died of disease.

Typhoid enacted an even greater toll in the Boer War. By the end of the war the British had had 57,684 cases of typhoid with 8,022 deaths. During the war 14,000 died of preventable disease and 8,000 from battle. Vaccination against typhoid was first used in a small way in this war. Vaccination against typhoid was first made compulsory in our army in 1911. By 1913 there was no mortality among our troops from typhoid. During the world war there were only 213 deaths from typhoid in our force of 4,000,000 men, thanks to universal vaccination.

Malaria has played an important part in the history of the world in that it has been endemic over a wide territory. It was introduced into Italy from Africa in the third century B.C. Rome built on the seven hills and well drained by the famous sewer known as the Cloaca Magna was spared from malaria for a time but the influx of the rabble into the city from the surrounding country carried the disease to the city and contributed to the fall of Rome.

During the conquest of Peru by Pizarro the Spanish soldiers suffered terribly from malaria. The story is told that while on a march one soldier sick of malaria was left behind to die. Parched with thirst he had just enough strength to pull himself to a pool containing bitter tasting water and drank of it. He recovered from the disease and joined his company. His miraculous cure led to the discovery that a log of Peruvian bark accounted for the bitter taste and curative quality of the water in the pool. The Jesuits brought the bark to Europe and Peruvian bark or powder became the cure for malaria. Peru had a monoply on quinine until the Dutch cultivated the trees in Java. Fortunately the synthesization of atabrine provides a treatment for malaria just as potent as quinine.

The origin of syphilis is obscure. Some have stated it was contracted from the American Indans but this is open to question. It first made its appearance in Europe in 1494 following the return of a military force from Naples. It was

the ambition of Charles VIII of France to conquer Italy, proceed to Turkey, wrest Constantinople from the Turks and establish himself as Emperor of the East. To this end he gathered a mercenary army consisting of French, Germans, Swiss, Hungarians, Poles, Portugese and Spaniards and marched into Italy. Meeting with little resistance he soon occupied Naples. His soldiers gave themselves over to an orgy of dissipation until a coalition formed against him and he retired from Italy. The returning soldiers spread the disease syphilis, then known as the French disease, all over Europe. It seems probable that the Spanish soldiers of the invading force may well have spread the disease in Naples and thence all over Europe. The venereal nature of the disease and the value of mercury in its treatment were recognized early by the Italian physician Di Vigo. Di Vigo's mercury plasters still appear in the U. S. Pharmacopœia.

The story of yellow fever is pretty well known. It was endemic in Central America as far back as we know. The Mayas of Yucatan are known to have attained a high degree of culture between the years of 200 and 600 A.D. They built beautiful palaces, temples and cities. In 1454 they suffered an epidemic of yellow fever which nearly exterminated the race. Almost yearly epidemics were experienced between the years 1545 and 1576 after which the race scattered. The Mayas lived on low ground whereas the Aztecs lived on higher ground. Yellow fever was doubtless the cause of the race's extinction.

Yellow fever played an important part in the history of Hayti. Discovered by Columbus, Hayti later became a French colony. Negros were imported in large numbers and eventually outnumbered the other races. A rebellion in 1800 under the leadership of a negro named Toussaint L' Overture led to Napoleon's sending a force of 30,000 men to Hayti to quell it. When the force landed at Cape Haytien the negroes burned the town and retired to the hills. Only 7,000 of the original force of 30,000 survived yellow fever and returned to France.

It may not be remembered that a Cuban physician by the name of Carlos Finlay in an article published in the *American Journal of Medical Sciences* in 1889 was the first to contend that yellow fever was spread by the *Cutex fasciatus* mosquito later called the *Stegomyia fasciata.*

It was the United States army commission headed by Walter Reed, James Carroll, Lazear and others that definitely proved the role of the mosquito in the spread of the disease. It was William Gorgas who by practical application of this knowledge freed Havana of yellow fever in a short time and made the construction of the Panama Canal possible. Had it not been for yellow fever the French would have built and owned the Panama Canal, the consequences of which can only be conjectured. Had it not been for the conquest of yellow fever in Panama by Gorgas the canal would not have been built.

The havoc wrought during World War I by the epidemic of influenza is general knowledge. It accounted for 24,000 deaths among the United States troops alone and many more thousands in our civilian population. Our loss from conflict was some 35,000. The grand total of deaths from this pestilence throughout the warring world was incalculable.

What can we anticipate regarding the role of disease in the present global war? We know much about the causative agents of many diseases likely to be encountered, their mode of spread and how to prevent their spread. We also have specific remedies for certain diseases. Nevertheless our troops will encounter and have already encountered conditions in which prevention and treatment of disease will be impossible.

In campaigns such as on the Bataan peninsula and in Guadalcanal it has been difficult to safeguard food and water supply and impossible to combat the mosquito. Our forces are being sent to all parts of the globe. Universal vaccination is being practiced against typhoid fever, smallpox and tetanus. Troops being sent to the tropics are receiving additional vaccination against yellow fever, typhus and cholera. Some troops will be sent to regions where they will encounter malaria, amebic and bacillary dysentery, plague, kala-azar, dengue fever, sandfly fever and the helminthic infections against which no preventive vaccination has been developed and general sanitary measures constitute the only defense.

Malaria probably constitutes the most serious problem. In combat areas the usual methods of exterminating the mosquito and complete screening of well soldiers and those sick from malaria are impractical. Fortunately the army was well stocked in advance with quinine and the routine administration of quinine and the equally efficacious synthetic atabrine will hold malaria symp-

toms in abeyance but will not prevent infection. Without doubt many soldiers will return from the tropics infected with malaria. We have the anopheles mosquito, the vector of the disease, in many parts of the country including Minnesota. It seems likely we may see more malaria in Minnesota following the war.

We can expect a goodly number of soldiers returning from the far East with amebic dysentery just as after the last world war.

Bubonic plagues should not prove a serious problem. We know it is spread by the rat flea and rigid measures directed against the landing of infected rats at our ports should prevent spread in our country. There is a focus of plague in California among the rodents which constitutes a constant threat to citizens in that state.

Fortunately dengue and sandfly fever, although major causes of disease in some areas, are seldom fatal.

Yellow fever is endemic in South America. The Aedes Aegypti mosquito which is the vector of the disease is present in the southern states and a few cases could conceivably start an epidemic. The prevention of the importation of mosquitoes infected with the disease on airplanes arriving from South American countries is important. Vaccination is said to be effective. The appearance of jaundice in soldiers a few weeks to six months following vaccination with certain batches of yellow fever vaccine caused considerable publicity. Some of those vaccinated were acutely sick. Although the cause of the jaundice has not been satisfactorily explained the elimination of human serum in the preparation of the vaccine seems to have solved the problem.

Typhus fever can be prevented largely by controlling infestation with the body louse. The disease has been present on the Russian front and in Northern Africa where in 1942 severe epidemics occurred from Morocco to Egypt. The effectiveness of immunizing methods has yet to be confirmed.

We have had small epidemics of typhus fever in this country. A number of cases in New York City a number of years ago of so-called Brill's disease proved to be typhus fever.

As recent as 1939, 100 cases of typhus constituted a small epidemic in Nashville, Tennessee. This outbreak was not associated with the body louse but was transmitted by the rat flea which is the vector in endemic cases. Extermination of the rat in localities of the city where the disease appeared terminated the epidemic. From a practical standpoint only those working in places like a warehouse apt to be infested with rats are likely to require vaccination against typhus.

Of the various methods of preparing vaccine this much can be said. Weigl's method of injecting the virus into the rectum of a louse and using the dissected intestines in preparing the vaccine is too cumbersome inasmuch as 100 lice are required for one vaccination. Cox's method of injecting the yolk sac of the embryo chick is commercially practical and is now on trial in Rumania, Hungary, Spain and China.

Interesting in connection with the subject of typhus is the story of the visit to Mexico in 1910 of Dr. Howard T. Ricketts of Chicago and a medical student by the name of Russell Wilder to study typhus. Ricketts described small organisms in the blood of patients sick with typhus and in lice. Dr. Ricketts died of the disease. The group of organisms which are the cause of typhus and Rocky Mountain Spotted Fever were named richettsia in his memory.

Cholera is an infection by a vibrio and resembles typhoid in its mode of infection. Troops stationed or traveling through Asia have been immunized beginning in 1942.

Will another influenza epidemic complicate the present world war? While we know the disease is due to a virus and types A and B have been described no effective vaccination for general application has so far been worked out.

Few are the items that can be listed on the credit side of war. A few surgical procedures such as improvement of technique in amputation of limbs, debridement, the Carrel Dakin irrigation of wounds, the Orr treatment of osteomyelitis resulted from war experience. Most of the advances in the discovery of the cause of disease, its prevention and treatment have been made during peacetime.

As outgrowths of war may be mentioned the development of the military hospital which can be traced back to the time of the Crusades when a monk, Brother Gerard, founded the hospital of St. John in Jerusalem open to Mohammedan, Jew and Christian alike. The development of the profession of trained nurse dates back to Florence Nightingale and the Crimean War. It was a Swiss Henry Dunant who as a spectator at the bloody battle of Solferino in Italy in 1859, conceived the idea of the Red Cross, the first Con-

gress of which met in Geneva in 1863. Clara Barton, an American woman, was in Berne, Switzerland, in 1870 at the outbreak of the Franco Prussian War. She joined the German Red Cross and after the war on her return to this country succeeded after nine years of perseverance in inducing Congress to join the International Red Cross as the thirty-second nation to join.

On the debit side of war is the slaughter of the best physical specimens of manhood of the countries involved and the resultant physical and mental wrecks resulting from war wounds and disease. Disease and starvation, in civilian population, to say nothing of the destruction of property only add to the sum total of war devastation.

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CASE REPORT

FAILURE OF SURGICAL WOUND HEALING DUE TO TALC

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A private in the United States Coast Guard, aged twenty, was admitted to the hospital because of pain in the right lower quadrant. The following day an acutely inflamed appendix was removed through a McBurney incision under spinal anesthesia. The abdominal wall was closed in layers without drainage using chromic 0 for ties and chromic 1 for the peritoneum, fascia and muscle. No sulfonamid drugs were used in the peritoneum or wound. A low grade fever reaching 103.4° and returning to normal on the sixth postoperative day was thought to be due to bronchopneumonia. Sulfadiazine was given to a blood level of 4.26 mg. per cent. The white blood cell count never rose above 8,900. The pulse reached 100 and respirations were from 20 to 30 per minute. The patient was discharged on the eleventh postoperative day, apparently cured.

Seven weeks after the appendectomy there had developed a bleb-like swelling in the operative wound with apparent separation of its deeper margins. Clear, yellow, jello-like material was released from the pocket immediately beneath the epidermis at this time and adhesive tape and dressing were applied. From that time on the wound remained at least partly open and had a sero-purulent drainage. One week later or two months after the appendectomy a sinus tract was found leading down to the peritoneum. There was some resection of the wound margins and they were resutured. Three months after the appendectomy there was a chronic draining sinus at the lower end of the scar from which staphylococcus aureus was cultured. There was again obvious separation of the wound margins although the scar was covered for the most part by a thin bluish layer of epidermis. The wound was again completely opened. Its margins were resected and again sutured together. On this occasion the same clear, yellowish, jello-like fluid was found in a large part of the old scar area. This space was apparently connected with a narrow sinus tract leading out to the lower margin of the scar. The patient's general condition was good. Laboratory studies including blood plasma protein determination, Klein test, blood cell counts and urinary findings were entirely normal.

The biopsy material from the resected margins of the appendectomy wound revealed an extensive chronic granulomatous inflammatory process with numerous foreign body giant cells, the majority of which contained easily visible double refractile crystals of the magnesium silicate or talc type.

Discussion

There is a surprisingly delayed but rapidly growing literature on the subject of glove powder in surgical fields. Practically every part of the body has now been described by Antopol,[1] Erb,[5] Feinberg,[6] Antopol and Robbins,[2] Ramsey,[11] Ramsey and Douglas,[12] Byron and Welch,[3] Owen,[10] and German,[8] as having been involved in tissue reaction due to dusting powders including the brain, spine, kidney, testis, hemorrhoids, neck, breast, maxillary sinus, cervix and the abdominal wall and its organs. Complications were discovered up to seventeen years after the original operation.

There are two principal dusting powders, hydrous magnesium silicate or talc, U.S.P. which is almost universally used in this country, and lycopodium powder which consists of spores from a species of club-moss. When in contact with barren tissues, both powders will excite a chronic granulomatous process somewhat similar to the reaction caused by the tubercle bacillus. The

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From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota. Reported before the Northern Minnesota Medical Society annual meeting, August 28, 1943, Duluth, Minnesota.

AN ANALYSIS OF DEATHS DUE TO TOXEMIA OF PREGNANCY

Minnesota Maternal Mortality Committee

A committee, appointed for the purpose by the Minnesota State Medical Association, has reviewed the case records of all women who died between July 1, 1941 and June 30, 1942 in Minnesota and whose deaths could be assigned to pregnancy or to any complication of pregnancy. Herein is presented a study of the case records of those patients whose deaths were charged to toxemia of pregnancy.

In addition to determining the cause of death, the committee has attempted to determine the contributory factors as they are related to (1) prenatal care, (2) conduct of labor and delivery and (3) postpartum care.

At the outset, the committee adopted certain minimal requirements for adequate obstetric care which could and should be carried out by any physician licensed to practice medicine in Minnesota. Except for details relating to birth certificates and to maternal and infant deaths, these requirements are appended as follows:

First prenatal visit.

1. Adequate history and general physical examination, with accurate follow-up of any abnormality revealed by these.
2. Pelvimetry, to include anteroposterior diameter of the inlet (internal) and intertuberous diameter.
3. Complement fixation reaction of the blood for syphilis.

Routine prenatal visits.

1. Determination of blood pressure.
2. Urinalysis, especially for albumin.
3. Determination of weight.
4. Abdominal palpation during last two months of gestation.
5. Reasonably adequate study of abnormalities presenting themselves during these visits.

Labor and Delivery

1. Adequate use of generally recognized obstetric procedures.
2. Observance of adequate asepsis.

Postpartum Care

1. Reasonable promptness in recognition of abnormalities.
2. Reasonable promptness in institution of adequate treatment.

This report deals with the cases of fifteen women who died from causes attributed by the committee to the toxemias of pregnancy. These deaths constitute 13.3 per cent of the total maternal deaths for the designated year. Statements contained in the report of the investigation of maternal deaths are based on facts recorded in the case reports obtained by special investigators. Critical analysis of the management by the physician in such cases reveal many instances in which the minimal requirements for maternal care were not met. It should be stated that these cases represent comparatively few deaths among the many maternity cases in Minnesota.

The Committee on Maternal Mortality in Minnesota was appointed for the purpose of investigating causes of maternal mortality in the state. The committee is not concerned officially with the legal aspects of inadequate medical care of the parturient woman but rather is interested in improving this care as a means of lowering the incidence of maternal and fetal morbidity and mortality. With this in mind, in the report on maternal deaths attributable to the toxemias of pregnancy, the principles of management of these toxemias will be reviewed briefly in order to designate more pointedly various aspects of the inadequate and often erroneous care received by these patients.

"Toxemias of pregnancy" is a term which has been accepted widely as applying to any condition, occurring in the course of pregnancy which is featured by hypertension and, usually, by edema and albuminuria. Formerly, nausea and vomiting of early pregnancy and the rarely occurring acute yellow atrophy of the liver, were called toxemias of pregnancy. When signs of hypertensive toxemia appear early in a pregnancy it is almost certain that chronic arterial or renal disease, or both, were present prior to that pregnancy. When these symptoms first appear late in a pregnancy (third trimester) it is equally certain that the acute hypertensive toxemia developed in the course of that pregnancy.

So many articles have appeared relating to the toxemias of pregnancy that it should be common knowledge among physicians who care for pregnant women that 5 to 10 per cent or more of these women exhibit evidence of toxemia, that toxemias predispose to many premature births, fetal deaths and infant deaths, and that frequently they are the cause of subsequent chronic arterial or renal disease. Also, it is common medical knowledge that hypertensive or renal disease complicating pregnancy may lead to eclampsia and sometimes death.

To an appreciable extent, maternal and infant mortality due directly or indirectly to severe nonconvulsive and convulsive toxemias are preventable. Prevention is effected by following the simple principles of routine prenatal care and by early recognition and adequate treatment of these complications. Usually the toxemia can be discovered and treated before the appearance of alarming symptoms.

Prenatal Care

Adequate prenatal care is a vital part of the practice of obstetrics. An adequate prenatal examination begins with the first visit of the pregnant woman to the physician. In fact, under the most ideal conditions, a prospective mother is examined thoroughly prior to pregnancy. At the first examination a history is obtained and recorded of previous illnesses or operations, of the course,

outcome and complications of previous pregnancies and of the course of the present pregnancy to date. Complete physical examination is desirable but it should include at least a record of the patient's weight and blood pressure and investigation of the heart, lungs and pelvis, including external and internal pelvic mensuration. The blood is examined to determine the concentration of hemoglobin and it is subjected to complement fixation reaction for syphilis. The urine is examined to determine its specific gravity and whether or not albumin, sugar and red and white cells are present. At this time the patient is advised about diet, with special attention to limitation of intake of salt and to avoidance of excessive gain in weight by restricting the intake of carbohydrates and fats. She is told to include in the diet an ample amount of protein. She is directed to return for examinations at regular intervals, at least every month until the seventh month of pregnancy is reached, and every two weeks or oftener thereafter. An accurate follow-up investigation of any abnormality is essential.

Among these fifteen cases it is hardly surprising to find that three had no prenatal care or practically none; in seven, the care was faulty and in at least two, it was grossly faulty. Enumeration of the errors, more than one of which applied in some cases, included incomplete history or inadequate records, seven; not recorded physical examination, four; no record of pelvic mensuration, six; no complement fixation reaction, five; no urinalysis, two. In other instances the patient was not weighed or the follow-up examination was incomplete. In several instances the patient was not given dietary advice, such as, to lessen the intake of salt in order to help avoid retention of fluids which produce edema, or she was not warned of the danger of continuing pregnancy in the presence of severe toxemia. On several occasions the responsibility for the death was attributed to neglect on the part of the patient to consult a physician or to follow his advice until after the development of grave symptoms of toxemia.

In addition to the first examination the chief value of prenatal care rests on repeated periodic examinations which usually enable the physician to detect a complication early and to institute treatment before the complication has become severe. The scope of this communication permits only brief mention of the detection and management of preëclamptic toxemia. Those who are alert to the seriousness of this disease know that its chief finding is hypertension, usually accompanied by albuminuria and often by edema. A rise in blood pressure, which is commonly the first evidence of toxemia of pregnancy, can be detected in the course of prenatal examination. Hypertension occurs in the presence of widespread spasm or injury of the arterioles. Although the cause of this injury has not been shown conclusively, it has become evident that measures to relax arterial spasm remain the most effective treatment of preeclampsia. When hypertension is discovered, therefore, rest and sedation are of primary importance. If the hypertension is accompanied by edema, the intake of sodium chloride in the diet should be greatly reduced and diuretics, such as ammonium or potassium nitrate, are employed to promote excretion of water and salt. Saline laxatives may be employed as indicated. Unless the hypertension is promptly lowered or in case the blood pressure is more than an arbitrary figure of 160 systolic, the patient should be hospitalized. When such measures are followed, the occurrence of eclampsia is rare.

Delay in recognition of the toxemia, or failure to institute treatment early, occurred in six cases, in four of which failure to hospitalize the patient also was a feature. Among the patients hospitalized, nine did not receive, even in the hospital, adequate examination and care. In certain cases the patients suffered from faulty treatment of the toxemia, failure to take steps to terminate pregnancy when indicated, inadequate use of sedatives and one toxemic patient was inadvisably discharged from the hospital. One patient with cardiac complications was not followed up.

Labor and Delivery

If the toxemia is severe and progressive, termination of pregnancy is indicated at any period of gestation. These patients react unfavorably to trauma and methods of induction of labor and of delivery should be selected accordingly. Induction of labor by medication is desirable but the use of pituitrin is dangerous because of its effect in raising the blood pressure. Rupture of the membranes, under asceptic technique, is the simplest and safest method of mechanical induction at or near term. Certain conditions, such as disproportion between the fetus and the pelvis, or the presence of a long, thick, uneffaced uterine cervix as, for example, in an older primigravida, may be an indication for cesarean section.

The employment of sedation in these cases is extremely important before, during and after labor, because it tends to prevent the occurrence of convulsions. Those patients who had hypertension before becoming pregnant and among whom severe toxemia develops, are prone to have sharply lowered blood pressure postpartum which may proceed to acute vascular collapse. In such cases the blood pressure should be watched for several hours after delivery, particularly after operative delivery.

Eclampsia with convulsions should not be treated radically. Sedation by the hypodermic use of ¼ to ½ grain (0.016 to 0.032 gm.) of morphine, repeated if necessary until the respiratory rate is lowered to between 10 and 14 per minute, has been helpful. Judicious administration of 20 c.c. of a 10 per cent solution of magnesium sulfate intravenously every hour until the convulsions are controlled has proved effective. In addition to the use of sedatives, in many instances improvement has been obtained and diuresis has followed the intravenous administration of 250 c.c. of 20 per cent solution of glucose, followed by less concentrated solutions after diuresis has been established.

If the patient is not in labor it is safer to defer mechanical methods of induction of labor until after cessation of convulsions. Rapid, forcible dilatation of the cervix and forcible delivery should not be done. Immediate cesarean section during the convulsive state is followed by a high rate of mortality. Too much

emphasis cannot be placed on the importance of treating the disease first and terminating the pregnancy later.

It is common knowledge among physicians practicing obstetrics that the risk, to the toxemic patient, of labor and delivery is greatly increased. In this connection, the management was grossly faulty in at least three cases, in one of which, clearly, there was too great diffusion of responsibility. Among the errors were intramuscular injection of pituitrin for induction of labor in three cases of preëclampsia and during labor in five such cases. The rise in blood pressure following the injection of pituitrin precipitated convulsions in three instances. Selection of the method of induction in one case and the method of delivery in four cases, including two in which delivery was by cesarean section, was most questionable.

Poor choice of anesthesia was recorded in three cases. Inadequate sedation of a patient with a cardiac lesion in labor, failure to spare such a patient the strain of second-stage delivery, ill-advised manual removal of the placenta, and inadequate asceptic preparation for, and technique of, delivery were noted in one each of four cases.

Postpartum Care

That the care of the parturient woman does not end with the birth of the baby applies in even greater degree to the toxemic patient than to the "normal" parturient. Among these patients was found evidence of definitely faulty postpartum care, such as lack of postpartum sedation, unwarranted administration of pituitrin to the severely preëclamptic patient, the administration of intravenous saline solution to an eclamptic patient, the use of excessive intravenous therapy in one case, and, in another, the employment of inadequate intravenous therapy. The record of one patient who died of vascular collapse following delivery illustrates the necessity of repeated estimations of blood pressure following delivery if a patient is suffering from severe, chronic hypertension and how important it is for every hospital to have available blood, plasma or other solutions for the immediate intravenous treatment of shock.

Deaths

Among the fifteen patients referred to in an earlier paragraph were nine who gave evidence of chronic cardiovascular disease and six whose hypertensive toxemia had its onset in the course of pregnancy. Six patients died of eclampsia, three antepartum and three postpartum. In three cases, the eclampsia afflicted patients who had chronic cardiovascular disease and in three the eclampsia was the culmination of acute preeclampsia. Two deaths were attributed to cardiac failure complicating toxemia. One death occurred as a result of vascular collapse following cesarean section and one resulted from obstruction of the small bowel following cesarean section for preëclampsia. One death was caused by cerebral hemorrhage and one by hemorrhage into the adrenal glands. One patient with preeclampsia died in labor of hypoglycemic shock, one of terminal uremia and one died nine days postpartum of neglected epistaxis associated with chronic cardiovascular disease.

With the records of each case before it, the committee attempted to decide in which cases death might have been prevented, and who might have been responsible for not preventing the death. It was felt that death could not have been prevented in two cases, that death was probably preventable by the physician in five cases, but evidence indicated that death could have been prevented by the physician in five cases, that the responsibility rested on the patient in two cases and that the physician and patient shared in the responsibility in one case.

Comment

Vital statistics for the State of Minnesota show that for many years the maternal mortality rate in this state has been among the lowest, and sometimes the lowest, in the United States, indicating that the general average of maternal care in this state is adequate. Usually toxemias of pregnancy are found to be the cause of approximately 20 per cent of maternal deaths. Among the cases for the year under review, only 13.3 per cent of the deaths were attributable to toxemia. This would appear to indicate that the physicians of Minnesota have amplified their understanding of the toxemias of pregnancy and their ability to cope with this complication. However, review of the case records of the fifteen patients whose deaths were assigned to toxemia, indicates that there were some physicians practicing obstetrics in Minnesota who either had not familiarized themselves with the minimal requirements of adequate prenatal and obstetrical care or who used faulty judgment in applying their knowledge.

On the basis of this survey of the data obtained from the cases in which the patients died of toxemia it is recommended that:

1. All physicians who assume the responsibility for maternity cases should be familiar with the essential principles of prenatal and maternal care.

2. All such physicians should keep as a minimum an adequate record of the prenatal, labor and postpartum findings and care of each patient, including a history of previous pregnancies and their outcome.

3. At the time of her first visit to the physician, each pregnant woman should have sufficient physical examination to enable the physician to be familiar with her general state of health, specifically including urinalysis, blood pressure, weight, complement fixation test for syphilis, and pelvic measurements.

4. Repeated prenatal examinations should be made at monthly intervals up to the seventh month of gestation and, after that, at intervals of two weeks or more often; the weight, blood pressure and results of urinalysis should be recorded at each visit.

5. Physicians should be familiar with the signs and symptoms of the toxemias of pregnancy and with the recognized and accepted principles of management of this disease before, during and after parturition.

CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

J. B. Arey, M.D. Pathologist

Presentation of a Case

J. B. Arey, M.D., and W. E. Peterson, M.D.

Dr. Arey: The case is that of a seventy-nine-year-old white man who was admitted to the Minneapolis General Hospital on May 19, 1944, where he died June 15, 1944. On admission he stated that he was apparently well until three to four days prior to admission, at which time he noted severe pain in the left foot, associated with redness and swelling.

Past history revealed that the patient had suffered from a similar episode about ten years ago. During these past ten years he had noted the appearance of multiple firm, nodular, painless masses on the back of his hands and fingers and over the elbows and knees. During this ten-year period he suffered from intermittent attacks of pain and swelling in both great toes. The family history was noncontributory.

Physical examination on admission showed a temperature of 100.4, pulse 92, respirations 22, blood pressure 150/80. He appeared to be in quite good condition, and complained only of his feet. Pertinent physical findings included questionable left ventricular cardiac enlargement and a loud systolic murmur at the apex of the heart. The base of the left great toe was markedly swollen, and there was a lesser degree of swelling of the entire left foot and lower leg. This swelling was associated with mild redness and increased temperature of this area. Upon motion, active or passive, the great toe was very painful. There was a slight bluish discoloration of the toes of the right foot, and at the base of the right great toe were multiple scars said to represent healed spontaneous fistulous tracts.

There were multiple firm, nodular, painless, yellowish masses varying up to 4 cm. in diameter over the dorsum of the hands and fingers and over the elbows and knees. These masses appeared to be attached to the bones and joints, but there was no limitation of motion except for the left fourth finger and the left great toe. There was a large nodule on the medial aspect of the left metatarso-phalangeal joint, and a smaller mass in a similar position on the right.

Laboratory examination on admission showed a negative serology, hemoglobin 90 per cent, white blood count 12,500 with 87 per cent polymorphonuclear leukocytes. The urinalysis on two occasions showed a specific gravity of 1.016, trace to one plus albumin and occasional red and white cells. The blood uric acid on admission was 6.2 mg. per cent, blood urea nitrogen 35 mg. per cent, cholesterol 150 mg. per cent. On June 2, 1944, the uric acid had risen to 7.0 mg. per cent, blood urea nitrogen to 43 mg. per cent and the creatinine was now 3.6 mg. per cent.

The patient became somewhat listless and drowsy shortly after admission and continued in this manner until his death. Shortly after admission a draining sinus developed at the base of the left great toe. Abundant greyish, putty-like material drained from the sinus, and chemical analysis showed this to contain both urates and cholesterol. The sinus continued to drain and appeared secondarily infected, and on several occasions hemolytic streptococci were cultured from the drainage material, so that surgical drainage was instituted.

Continuous hot packs were maintained on the left foot, and the patient received a short course of colchicine therapy with some relief of symptoms. On May 21, 1944, a nodule was removed from the left wrist, and histologic examination confirmed the clinical diagnosis of gout.

The patient's temperature ranged between 99° and 101° until June 1, 1944, when it rose to 102° and continued at this level until the day of death, when it fell to 97°. In spite of his somewhat drowsy, listless condition, his condition was not considered critical, but he died suddenly on June 15, 1944, approximately one month after admission.

Dr. Stenstrom: X-ray examination of the hands and feet shows marked punched out areas of destruction involving the phalanges. There is marked soft tissue swelling about the involved joints. The picture is that of an extreme degree of gouty arthritis.

Dr. Phares: Postmortem examination revealed the aforementioned nodules distributed over the hands, feet, elbows and knees. There was a gangrenous area involving the left heel, and an open, draining wound on the dorsum of the left foot. Large tophi were present over both first metatarso-phalangeal joints, and the skin over these showed considerable desquamation. A draining sinus at the base of the left great toe communicated with the metatarso-phalangeal joint, and upon opening the joint cavity a mass of putty-like material about 7 cm. in diameter was removed. The cartilage of the joint was almost completely destroyed, and there was considerable destruction of the adjacent ends of the bones.

The heart weighed 400 grams. There was moderate hypertrophy of the left ventricle, but no definite dilation of any of the chambers. The coronary orifices were patent. At a point .5 cm. from the right coronary orifice the lumen of the vessel was completely occluded by atherosclerosis for a distance of several millimeters. Portions of the circumflex branch of the left

coronary artery showed up to 60 per cent narrowing by atherosclerosis, and one point in the anterior descending branch of the left coronary artery was approximately 20 per cent narrowed. No thrombi could be located in any of the coronary vessels. On section the myocardium showed multiple patchy areas of fibrosis.

The lungs together weighed 980 grams. There was moderate congestion of both lower lobes, and several small areas of bronchopneumonic consolidation were present in the left lower lobe.

The liver weighed 1,720 grams, and on section showed no appreciable change from the normal.

The right kidney weighed 115 grams, the left 120 grams. The surfaces were finely and coarsely pitted, and there were several smooth-walled cysts up to 1.5 to 2 cm. in diameter on the surface of each kidney. On section the cortices were definitely narrowed, but there was no dilation of either pelvis or ureter. Scattered through the medullary portions of each kidney were a very few yellowish, linear crystalline deposits.

Microscopic

Dr. Arey: Sections of the kidney show severe arterial and arteriolar disease in addition to the deposits of sodium urate crystals in the medullary pyramids. Although in rare instances such tophi in the kidneys may be sufficient to cause renal insufficiency, in this case the deposits are very small and could hardly have contributed to the elevated B. U. N. Large areas of renal parenchyma are atrophic as a result of the severe arterial changes, and the microscopic picture is that of a primary chronic hypertension with moderate renal insufficiency. In sections fixed in absolute alcohol and stained with the Galantha stain we were able to demonstrate a few small deposits of sodium urate in the renal pyramids, and about these was a chronic foreign body reaction.

Section of one of the tophi shows a mass of crystalline material surrounded by a fibrous capsule. Within the inner border of the latter are many giant cells, a response to the presence of a foreign body. Again these sections, when fixed in absolute alcohol and stained by special methods, showed the crystals to be sodium urate.

Sections of the heart show multiple patchy areas of fibrosis, secondary to disease of the coronary arteries.

In summary, this patient presented the classical signs and symptoms of gout, that is, podagra, multiple tophi over the extremities, an elevated level of the blood uric acid, and punched out areas of erosion in the joints demonstrable by x-ray. In addition, there were a few small tophi in the renal pyramids. The uremia, however, was due to the arterial and arteriolar disease in the kidneys associated with hypertension. The immediate cause of death was coronary occlusion on the basis of atherosclerosis.

Dr. Peterson: This is a brief summary of some of the clinical pictures of gout. Gout is a disease of unknown etiology characterized by (1) acute recurrent attacks of arthritis followed by complete remissions in the early stages of the disease, and later progressing to a chronic arthritis; (2) supposed abnormality in the renal excretion of uric acid; (3) hyperuricemia which is at first transient but later persistent; (4) eventually deposits of urate crystals in the articular, peri-articular and subcutaneous tissues, sometimes in the kidneys and urinary tract; (5) frequent terminal vascular lesions in the kidneys, occasionally in the heart and brain.

The multiple suppositions as to the etiology of the disease give mute evidence of our ignorance of the basic disturbance. Among the most recent theories are (1) abnormal renal insensitivity to urates; (2) endocrine dysfunctions; (3) selective renal insufficiency for urates alone; (4) a functional disturbance of the vegetative nervous system involving the renal or thoracic sympathetic nerves; (5) an allergic reaction to exogenous or endogenous proteins, not necessarily those high in purines.

Gout is a disease primarily of the male sex (95 per cent). The onset is in persons usually between the ages of thirty-five and fifty; it occasionally may start at sixty or seventy, and rarely occurs in the teens. There is definite hereditary tendency of the disease. Familial gout affected 22 to 81 per cent of patients in five English series and from 7 to 12 per cent in five American series. It is more common in the temperate zone. The incidence is greater in England and France than in this country, but it is apparently increasing in North America. The disease tends to occur more often in spring or fall, but it can occur at any time. It is more likely to occur among the well-to-do (professional classes), tavern keepers and brewers.

Predisposing factors are hereditary, prolonged excess of food, drink and sex, and blood dyscrasias. There are numerous precipitating factors, such as (1) trauma, either minor or major; (2) surgery; (3) overuse of joints; (4) exposure to cold; (5) overindulgences and excesses of eat, drink or sex; (6) certain drugs, that is, salyrgan, ergotamine tartrate, liver extract, gold, dehydrocholic acid and thiamine; (7) purging; (8) severe hemorrhage; (9) transfusions.

Gout is known to be more common in private hospitals than in general hospitals. It is interesting to note that in the Minneapolis General Hospital records from 1933-43, there were only four cases of gout. Strangely enough, in the past six months of 1944, two cases have been diagnosed as classical gout. It has been reported from the Mayo Clinic in Rochester that classical gout constituted at least 5 per cent of those cases seen by the consultants on joint diseases.

Clinical gout can be divided into two great stages. The first stage is characterized by acute recurrent attacks of gouty arthritis followed by complete remission. In the first phase of this stage the attacks are generally monarticular, the patient is usually afebrile and the duration of the attacks is usually a few days (from three to ten), and is followed by complete remission. In the second phase of this first stage, the attacks are usually more frequent and may be polyarticular. The patient is sometimes febrile and the duration of the attacks is from a few days to weeks, and again is followed by complete remission. The duration of this

first stage averages twelve years after the onset of the gout, but the range may be anywhere from three to forty-three years before chronic gout is started. The second stage is that of chronic gouty arthritis. The first phase of this stage is characterized by active gouty arthritis with incomplete remissions, and gradually progresses to the second stage, a relatively inactive chronic gouty arthritis.

Podagra is present in about 70 per cent of the initial attacks. Ultimately it is present in about 90 per cent of the cases of gouty arthritis. Therefore in one-third of the cases the great toe is not involved initially and in 10 per cent of the cases it may never be involved. The hyperuricemia of gout shows no constant relationship to the stage of the disease, to the acute attacks, or to the appearance of tophi. It may or may not be present in the early stages of the disease, but it is usually more marked as the disease progresses. It is present at some time or other in about 75 per cent of the cases. Subcutaneous tophi are found in about 50 per cent of the cases, usually in later stages of the disease. Osseus tophi will ultimately involve about 30 per cent of the cases, while urinary tophi, that is, urate stones or gravel, are passed in about 13 per cent of the patients sometime during the course of the disease. So-called "vascular nephritis" and urate deposits in the renal parenchyma have been reported in about 22 per cent of the cases.

The attacks of acute arthritis typically involve the distal joints, the feet, ankles, hands and wrists; rarely the hips or shoulders, and very rarely the spine. Olecranon bursitis and Achilles tendonitis are often present. The joints are warm and red and bluish in color, appear shiny, may have some edema, and as the attack regresses the skin tends to desquamate and there may be some itching. When podagra is present tenderness is usually on the medial aspect of the joint.

The onset of the attack is usually rapid and reaches maximum intensity within twelve to thirty-six hours. The attacks frequently occur between 2:00 and 7:00 a.m.; the pain may be worse at night, and is often of excruciating intensity. The regression of the attacks is usually rapid and may take place within a few days. In the first stages, the remission is complete.

The diagnosis of gout after the disease has become chronic is not a very difficult one. However, in the early stages of the disease, if it is not looked for, it may be easily confused with many other conditions.

The following is a summary of the twenty-one diagnostic points characteristic of gout mentioned by Dr. Philip S. Hench:

If acute arthritis appears following minor trauma or unaccustomed physical activity, and particularly if the inflammatory reaction is delayed following the injury or is out of proportion to the amount of trauma, or spreads to other joints, gout should be suspected. When acute arthritis develops within the first week following surgery, or in a patient to whom the aforementioned drugs have been administered, or following dietary excesses or hunting and fishing trips, gout should be suspected.

Acute arthritis beginning between the hours of 2:00 and 7:00 a.m., or in the spring or fall of the year should make one look for gout. Suspect as gout any acute arthritis which appears suddenly, runs a severe but brief course, and is followed by complete remission. Consider gout in any patient with chronic arthritis who gives a history of recurrent acute attacks of arthritis with complete remission.

Suspect gout in a sudden attack of acute arthritis in any male over forty years of age. Olecranon bursitis is more common in gout than in any other disease, and its occurrence should make one look for other signs and symptoms of the disease.

Be careful of making a diagnosis of gout in women. Only two to five per cent of the cases occur in women, and in these cases it is likely to be the classical form. Be careful of making a diagnosis of gout in the shoulders, hips or spine, either acutely or chronically affected, and only when there are unmistakable signs of gout or gouty arthritis.

Final Diagnosis: (1) Gouty arthritis; (2) Multiple tophi (extremities and renal pyramids); (3) Hypertensive heart disease; (4) Renal arterio- and arteriolosclerosis; (5) Coronary sclerosis; (6) Myocardial fibrosis; (7) Bronchopnuemonia (8) Uremia, mild.

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RICE DIET HELPS PATIENTS WITH HIGH BLOOD PRESSURE

Much attention is being attracted by the report of a diet that seems to help patients with high blood pressure and kidney disease.

Dr. Walter Kempner, of Duke University, developed the diet and reported it to the American Medical Association. It consists solely of rice, fruit juices, sugar, vitamins and iron.

Dr. Kempner's theory is that one of the kidney's functions, that of deaminating the amino acids of protein, is disturbed by lowered oxygen supply and the result is high blood pressure. The rice diet was developed to reduce the amount of protein the kidneys have to handle and thus lower the amount of harmful, abnormal substances which he believes causes the high blood pressure.

Not all patients benefit from the diet, though no ill effects from it have been seen. Blood pressures were reduced in about 60 per cent of the patients, he said. The diet, like that for diabetes, must be prescribed individually for each patient so far as amounts of rice and the other ingredients are concerned.

One nutrition authority listening to the discussion on whether the patients would be getting dangerously little protein from the diet, pointed out that the protein in rice differs from that in other cereals.—*Science News Letter,* July 15, 1944.

CLINICAL-PATHOLOGICAL CONFERENCE

ST. LUKE'S HOSPITAL—DULUTH

Arthur H. Wells, M.D., Pathologist

Presentation of Cases

Dr. R. S. Forbes: (Case A. 2774) This fifty-seven year-old mechanic was admitted to the hospital four weeks before his death with a chief complaint of pain in the right upper quadrant of two days' duration associated with jaundice. Five months before it was thought that he had the "flu" with pleurisy. The present pain was a sudden sharp stabbing pain in his right upper quadrant of a severe nature causing him to double over. He did not require morphine. He was nauseated but did not vomit. The pain lasted seventy-two hours and did not recur. There were no chills. The day following the onset of pain he noticed jaundice and his urine was dark and his stools light in color. He had lost from 174 to 130 pounds in the last seven months. During this time his appetite had been poor. Fatty food did not cause gastric distress. He drank an occasional beer. Physical examination revealed a large lymph node in the left supraclavicular region of the neck. There was some impairment of breath sounds over the left upper chest. The liver was enlarged three to four finger breadths below the costal margin. X-ray examination led to a conclusion of probable tumor in the upper portion of the left lung.

Laboratory examinations revealed cephalin flocculation—negative, blood urea nitrogen 26 mgs. per cent, creatinine 1.5 mgs. per cent, cholesterol 344 mgs. per cent, and cholesterol esters 68.9 mgs. per cent. Urobilinogen in stool and urine were negative. The galactose tolerance test result was 2.56 grams of sugar excreted. He followed a rather rapidly downhill course. There was a low-grade fever throughout the four weeks in the hospital which was considered to be due primarily to bronchopneumonia. No surgery was performed.

Dr. E. C. Bagley: (Case 53291) A sixty-eight-year-old white man was admitted about one year ago for repair of an umbilical and an indirect right inguinal hernia both of which had been recently increased in size. There followed an uneventful recovery. He was again admitted one month ago complaining primarily of swelling in the legs, feet and scrotum. For two weeks he had noticed a "stuffy" feeling in his abdomen and for one week there had been swelling of his scrotum and legs. After the swelling started, he began to feel tired all the time. There had been a rash on the scrotum for many months which itched considerably. There has also been some rash on his feet for the last few days. Loss of appetite during the last few weeks was noted. Physical examination revealed a grade IV edema of his lower extremities and scrotum. The abdomen was distended and shifting dullness in the flanks with a fluid wave was found. The veins over the abdomen were distended. An umbilical hernia measuring about ½ x ½ cm. was noted. The abdominal organs could not be palpated because of the severe distention. The blood pressure was 160/80.

Laboratory studies revealed red blood cell count 4,520,000, white blood cell count 11,950, hemoglobin 13.25 grams and differential count 58 per cent neutrophiles, 4 per cent eosinophiles and 38 per cent lymphocytes. On two occasions the urine was concentrated to a specific gravity of 1.020 and there were no pathologic findings. Blood urea nitrogen was 16.3 mgs. per cent, creatinine 1.5 mgs. per cent, chlorides 486 mgs. per cent, dextrose 99.6 mgs. per cent, blood plasma protein included albumin 4.038 grams, globulin 2.4 grams and fibrinogen 0.45 grams per 100 c.c. The icterus index was 33, fractional Van den Bergh quantitative direct 0.16 mgs. per cent, indirect 1.72 mgs. per cent. Blood cholesterol 150.6 mgs. per cent, cholesterol esters 60.6 mgs. per cent, bromsulfalein test, one half-hour specimen had 9 per cent, one hour specimen had slight trace. Cephalin flocculation test was a 4 plus reaction. Benzoic acid test resulted in 9.35 grams benzoic acid excretion in six hours, galactose tolerance test 1.84 grams excreted in six hours. Four thousand five hundred c.c. of acitic fluid from the abdominal cavity had a specific gravity of 1.010 white blood cell count 320, red blood cell count 7,550, with a differential count of 85 per cent lymphocytes, 10 per cent neutrophiles, and a quantitative protein determination of 1.15 grams per cent.

Dr. J. R. Manley: (Case 59355) A twenty-seven-year-old-shipbuilder was apparently in good health until two weeks before admission, when he developed chills, fever, general malaise and weakness. As these symptoms subsided he began noticing a continuous dull pain in the epigastrium which did not vary with meals. There was constant nausea and occasional vomiting of any kind of food. He first noticed jaundice two days before admission. He had a low-grade fever reaching 100.5° at its height and gradually fell to normal over a period of eight days in the hospital. His white count was 5,850, hemoglobin 14 grams, red blood cell count 4,570,000, differential count was 52 per cent neutrophiles, 42 per cent lymphocytes, 3 per cent eosinophiles, and 3 per cent monocytes. The urinanalysis was normal excepting for 3 plus albumin on one occasion. Bleeding time and clotting time were normal,

icterus index rose to 62 during the first week then gradually fell to 14 the day of discharge, two and one-half weeks after admission. The blood cholesterol was 161 mgs. per cent and cholesterol esters 42 mgs. per cent. These returned to normal the day before discharge, when they were 206 mgs. per cent and 118 mgs. per cent, respectively. The cephalin flocculation test remained 4 plus throughout. Galactose tolerance test was normal at 2.5 mgs. of sugar excreted. The quantitative Van den Bergh was 4.6 mgs. per cent with biphasic reaction. The benzoic acid test resulted in an excretion of 3.2 grams of benzoic acid, a normal figure. A twenty-four-hour urine revealed 2.4 mgs. of urobilinogen excreted and there was an average excretion of 2.3 mgs. of urobilinogen per day in a four-day stool specimen collection. X-ray examination revealed a nonvisualized gall bladder. The patient was greatly improved at the time of discharge and there has been no further recurrence of symptoms after four months.

Autopsy Findings

Dr. A. H. Wells: (Case A. 2774) A tumorlike mass solidified all of the structures of the upper mediastinum and invaded the entire mediastinal aspect of the left upper lobe of the lung extending for a distance of 2 cm. into the lung tissue and apparently originating from the main bronchus leading to the upper lobe, which structure was filled with a grayish, granular, friable, tumorlike tissue. The adjacent lymphnodes were moderately enlarged, gray, with blackish areas and solidified to the surrounding structures in the mediastinum. A few small, scattered areas of grayish, tumorlike tissue less than 5 mm. in diameter were found throughout both lungs. A supraclavicular lymphnode on the left measured from 2 to 3 cm. in diameter and had a hard, finely granular, grayish-cut surface. Retroperitoneal lymphnodes in the upper portion of the abdomen immediately underlying the common duct were enlarged up to 4 cm. in diameter and had the same tumorlike structure. The common duct immediately passed over the enlarged masses and became extremely tense and its lumen was obviously obstructed by pressure from the outside. There were 8 umbilicated and rounded, grayish, granular-surfaced masses ranging up to 6 cm. in diameter scattered through the liver. There were no calculi in the gall bladder or common duct. Rather hard, grayish, finely granular areas had displaced bony trabeculi in the sternum, ribs, and bodies of lumbar vertebræ. The remainder of the left upper lobe was almost completely nonair-containing and had an extensive consolidation with grayish purulent matter on the cut surfaces. There appeared to be some atelectasis and in the periphery there were several small abscesses measuring up to 8 mm. in diameter filled with thick, grayish pus. These were connected with smaller air passages which appeared mildly dilated.

Microscopic Study.—Sections from the tumor masses in the left upper lobe, upper mediastinum, left supraclavicular lymphnode and lymphnodes under the common duct as well as masses in the liver all had the same slender, small, hyperchromatic, anaplastic epithelial cells typical of the reserve cell carcinoma of bronchogenic origin.

Discussion

Dr. A. H. Wells: We have presented the summarized studies of three patients with liver and biliary system disease as diagnostic problems, the answers of which were satisfactorily arrived at by a combination of clinical and laboratory studies. It is generally agreed that the history and physical examination are decidedly of greater importance than laboratory studies in the great bulk of diagnostic problems involving these diseases. There are, however, a number of circumstances in which the internist or surgeon wants all of the aid that he can possibly get to arrive at the proper diagnosis. During the past decade the hospital laboratory with its means of accurately measuring various physiological processes has become an ever-increasingly practical aid in these difficult cases so that it is now essential to the modern care of these patients.

The most common diagnostic problem by far is that presented by a case of painless jaundice in which there is very little or no evidence of previous cholelithiasis. Under these circumstances the laboratory seldom fails to give valuable information necessary for the proper care of the patient. The principal decision to be arrived at is whether the patient has a medical or surgical condition. Since the patient generally presents himself within a few days of the onset of jaundice the various selected laboratory tests will nearly always be of diagnostic aid when properly interpreted. The cephalin flocculation test, blood cholesterol and cholesterol esters, galactose tolerance test, benzoic acid excretion test, quantitative urobilinogen in the urine and quantitative measurement of the direct and indirect types of biliruben in the blood are all means of determining whether the liver cells are functioning properly. Other laboratory procedures have been described as helpful. Since no one of the various tests can be relied upon to give conclusive evidence of minimal lesions, the results of several must be summarized into a single final conclusion.[5,9] In severe cases of diffuse liver cell injury nearly all of the tests will be strongly positive within a few days of the onset of jaundice. Whereas, in the usual case of mechanical obstruction of the common duct the tests will indicate normal liver cell function within the first two or three weeks of the onset of jaundice providing there has been no clinical evidence of a preceding recent obstruction of the common duct with resultant ascending cholangeitis.

In Case A. 2774 a principal complaint of right upper quadrant cholic-like pain precipitating the onset of jaundice might have led to the diagnosis of common duct stone and a choledochotomy. However, the internist and his consultants cleverly combined the other various clinical, x-ray and laboratory findings to arrive at the proper diagnosis. It will be noted that the various laboratory tests with particular emphasis upon the sensitive cephalin flocculation test[1] were negative for diffuse disease of the liver. The blood cholesterol was elevated with normal cholesterol esters. Biliruben of direct Van den Bergh type far exceeded that of the indirect type.[8] All of these tests point to obstructive jaundice. The quantitative urobilinogen in the stool and urine were entirely negative. The latter finding in the experience of Dr. Cecil Watson[11,12] and others is very strong evidence of obstruction of the common duct due to malignancy. Only occasional cases of common duct stone or diffuse disease of the liver will cause a complete absence of urobilinogen in the stool over a period of four days.

Case 53291 is a good example of a case of cirrhosis of the liver in which many physicians would be satisfied

with their diagnosis of cirrhosis based on the clinical manifestations alone. One simple laboratory procedure absolutely proved this diagnosis. The other laboratory procedures led to a presumptive diagnosis of cirrhosis. A liver biopsy obtained with the Vim-Silverman biopsy needle[10] revealed a moderately advanced cirrhosis of the liver. Dr. F. W. Hoffbauer has obtained "no better than three out of four positive biopsies" using the Silverman needle. Although he has not encountered any serious bleeding to date he remains cautious in the use of the punch biopsy of the liver. The various liver cell function tests may or may not be positive for interference with liver cell function in cirrhosis.[13] This probably depends on the amount of degenerative change in liver cells associated with the network of scar tissue throughout the liver. Generally the cephalin flocculation test[2] is positive along with one or more of the other tests listed above. The bromsulfalein excretion test[7] can frequently be used to great advantage in the 50 per cent of cases of cirrhosis where there is no clinical jaundice. Quick's benzoic acid excretion test was strongly positive in this case. A decrease in the albumin-globulin ratio of blood plasma proteins[3,6] has been found to be an important diagnostic and prognostic test in cirrhosis of the liver. Complete studies of the acitic fluid makes it possible to classify it definitely as a transudate or exudate.

Case 59355 was clinically typical of a so-called "acute catarrhal jaundice." However, the surgeon wanted confirmatory evidence which the laboratory supplied. The extremely low urobilinogen in the stool makes this case an exception of the rule stated above. However, it will be noted that the urobilinogen in the urine was higher than that in the stool, indicating an interference with liver cell function. The blood biliruben and cholesterol esters paralleled each other in this case revealing the increase in severity of the disease and later the return toward normal liver cell function. Blood cholesterol and cholesterol esters determinations are best used in series. The esters may disappear completely from the blood in a few days in severe forms of hepatitis while the cholesterol remains normal or slightly decreased. The cephalin flocculation test as usual showed its great sensitivity to diffuse liver cell injury. It is reasonable to assume that punch biopsies of the liver for diagnosis of the various forms of acute hepatitis[4] may become advisable with a better knowledge of the limits of safety of the procedure. With improved techniques needle biopsies of the liver could become to the diagnosis of liver disease what bone marrow aspiration is to hematology.

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FAILURE OF SURGICAL WOUND HEALING

(Continued from Page 640)

most frequent result is a granulomatous mass in the operative site. However, sinus tracts, lack of wound healing and improper healing of ulcerated surfaces are common. Hilding[9] believes that talc from surgical gloves will cause a chronic conjunctivitis especially after cataract operations.

Kaolin, an aluminum silicate, has been found by Cohn, White and Weyrauch[4] to produce a chronic granulomatous reaction in the human and rabbit gastric mucosa when fed by mouth. LeRoy Gardner[7] has demonstrated the same chronic tuberculous-like pathologic changes due to a variety of silicates when given to animals by inhalation or intravenous or tissue injections.

Conclusion

Serious complications in a wide variety of operative procedures have resulted from the use of dusting powders on surgical dressings, rubber gloves, drains and dams as well as for internal medications and coating for rectal suppositories. It is important that physicians realize the potential danger of these irritating substances and either eliminate them by careful washing of powdered gloves, before touching barren tissues or by finding some soluable, nonirritating dusting powder if a dry surgical glove technique is to be continued. Seelig[13] has suggested the use of potassium bitartrate, however. At present there is no agreement as to the proper substitute for the talc. It is suggested that washing the talc off the rubber gloves is not sufficient.

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PIONEER PHYSICIANS OF FARIBAULT COUNTY

ROSCOE C. HUNT, M.D.
Fairmont, Minnesota

(Continued from July issue.)

Joseph Edwin Couper

Joseph Edwin Couper was born in 1858, at Morristown, New York. He attended Carleton College, and the next few years pursued his medical education at St. Louis College and Hahnemann Institute, Philadelphia, where he graduated in 1881. The following year he was an intern at Ellis Island Hospital and then entered practice at Blue Earth City. An announcement card appears in the March 31, 1882, issue of the *Blue Earth City Post.*

Doctor Couper was a short man, quite fleshy. He was a perfect gentleman with a very kindly, likable disposition. He was a good physician practicing according to the homeopathic system. For miles around, his treatment of obstetrical cases was praised and he had records of over 2,000 cases attended during his twenty-three years of practice. He was never known to have refused a call, winter or summer. He thought Faribault County the garden spot of the world and had an ambition to own 1,000 acres of its rich farm lands. Starting the buying of land in his early years of practice he realized his ambition shortly before his death and did own 1,000 acres free from debt.

As a well-educated man, he enjoyed reading and especially music. He was a good pianist and had a fine tenor voice. His hobby always was the outdoors, trees, birds, flowers. He was a great hunter, roaming the prairies when the prairie chickens were plentiful and hunting the marshes for ducks in the fall. At that time of year, to the detriment of his practice, his well-blanketed team and buggy could be seen toward evening under sheltering trees on the east bank of Pilot Grove Lake, while he was out in the cat-tails of the sloughs where waterfowl abounded. He owned a fine Parker 12-gauge gun and was the best wing shot in the country.

He had a Lindeman buggy and sleigh and had a beautiful buffalo coat and robe.

Shortly before his death, he took his only child, Helen, on her birthday out to one of the farms and they rode ten miles back to town on a load of wheat. He planned to retire to one of the farms in a year or two, when death suddenly overtook him in the form of an apoplectic stroke in 1906.

Doctor Couper was a member of the Presbyterian church and the Masonic lodge.[7,14,17,19,34,38]

Joseph E. Stauffer

Joseph E. Stauffer was born in Nappanee, Indiana, September 18, 1854. His early education was in the schools of Elkhart County, Indiana. He continued his studies in the Northwestern Normal College at Valparaiso, where he spent the winter of 1876-7. He entered the medical department of Butler University of

Indianapolis and was graduated in the spring of 1882, after completion of the regular course. He then continued his medical studies at Rush Medical College where he graduated in 1883.

The same year, 1883, he located at Winnebago City, where he practiced until 1891. He started in association with Dr. J. H. Adair, also a Rush graduate, who soon afterward moved to Owatonna. While at Winnebago City, Dr. Stauffer had an extensive practice and was said to have been a fine physician and citizen.

In 1891, he went to the state of Washington, locating in Everett. In 1901, he was elected county physician and in the same year, county health officer. In the History of Puget Sound Country, the following is said of him: "Doctor Stauffer is a man of broad learning, especially in the lines of his profession, and continued reading and research add to his knowledge and promote in large measure his efficiency and skill."

In November, 1886, he married Kate B. Holley, a native of Minnesota. One daughter, Elizabeth, was born in Winnebago City.

Doctor Stauffer died at his home in Everett, September 26, 1933.[1,4,39,40]

Granville I. Smart

Granville I. Smart was born in Fryeburg, Maine, November 14, 1853, the son of Ira Granville Smart. He was one of eight children. He graduated from Fryeburg Academy and attended Bowdoin College, Brunswick, Maine, teaching school between semesters. He then attended Dartmouth and graduated from the Medical School in 1880. On June 18, the same year, he married Martha Plummer in Haverhill, New Hampshire.

After three years of practice, part of it in Grove City, Minnesota, Dr. Smart located in Blue Earth City, October 18, 1883, where he parcticed until 1901. As he had never been rugged in health, the climate and demands of practice became increasingly difficult and he went to Ontario, California, where he practiced a little and died April 10, 1906.

His family consisted of six children, three of whom are living (1942): Elliott P., Murphys, California, a physician; Esther Smart Mcleod, Westwood, Village; Los Angeles; and Granville I., Coalings, California.

Doctor Smart was a high-class physician and fine gentleman. He was handicapped by poor health at times but spent various periods in graduate study and had a large practice. He was a Mason and member of the Methodist church.[7,14,17,42,43]

Ferdinand N. Hunt

Ferdinand N. Hunt was born in Bond County, Illinois, in September, 1857, the son of Nehemiah A. Hunt, pioneer physician of Blue Earth County. He graduated from Mankato High School and attended Carleton College. He then taught school three years at Fairmont. In 1883 he graduated from St. Louis Medical School and located at Fairmont. He took over the practice of his brother, David Winslow Hunt, who had been the first physician there. He continued practice in Fairmont until 1892 when he sold his practice to Dr. W. J. Richardson of Hutchinson. A partnership was then formed with Dr. Granville I. Smart of Blue Earth City. In the late '90's Dr. D. W. Hunt came to Blue Earth City and remained three years.

In 1882 he married Ida L. Cadwell, daughter of a pioneer merchant, Alpha D. Cadwell. Two sons were born of this union.

During his twenty years of practice at Blue Earth City he went through the hardships of the country doctor on the prairie. The first laparotomy in the community was done in the year 1895 by Dr. W. J. Mayo at the home of Dr. Hunt's patient, Mrs. Charles Pride. It was for a large ovarian cyst. In the years that followed, Doctor Hunt did some surgery, appendectomies, herniotomies, et cetera. These were done in the doctor's home or that of the patient. His outfit consisted of a portable homemade operating table which could be folded and carried in buggy or sleigh, a portable sterilizer and cases for instruments and dressings. A good many operations were done by lamplight and several times by candlelight. Chloroform was the anesthetic used. Doctor Hunt made an annual trip to clinics such as J. B. Murphy's and Ochsner's in Chicago and frequent trips to the Mayo Clinic.

One of the greatest comforts the physicians of those days had were the Lindeman buggies and sleighs, made in Faribault of second growth ash. They were black with straw-colored wheels and runners and rode like a pullman. It was surprising how quickly the automobile took the place formerly occupied by the horses in the affections of the doctor. Doctor Hunt's first automobiles were the one-cylinder Cadillac, the Stanley Steamer, the high-wheeled Holsman and then the first Fords.

Doctor Hunt was a lifelong Republican, a member of the Presbyterian church which had been established by his uncle, Rev. Jacob Conrad, and lodges, including the Odd Fellows and Masons.

In 1914 with his son, Dr. Roscoe C. Hunt, he returned to Fairmont where he established the first hospital.

After over fifty years of active practice he died February 1, 1934, two weeks after a head injury caused by a fall on the ice. He was survived by his widow and two sons, Dr. Roscoe D. Hunt of Fairmont and Rollo F. Hunt, a lawyer of Duluth.[17,34]

Frank L. Durgin

Frank L. Durgin was born in Maine in 1852. He was educated in Baptist College in Hillsdale, Michigan, and started practice in Winnebago City shortly before 1890. He had an extensive practice for many years and was rated as a very good physician. For some years he was a partner of Dr. Hunes. He was quite active in politics and filled many positions of trust in the village and county. He was trustee for many years and president for one year of Parker College. He died about 1936 in the Baptist Old Folks Home (formerly Parker College).[1,3,4,17]

Nathan Saterlee

Nathan Saterlee was born in New York. He began practice in Winnebago City around 1875 after having been educated in an eastern university. He had practiced for thirty years in Beaver Dam, Wisconsin, previous to locating in Winnebago City. There is some doubt as to his medical education and knowledge, but he was a gentleman of the old school. Every day, rain or shine, he wore a stovepipe hat, a long black frock coat and a white shirt with a ruffled bosom. His father was a soldier in the war of 1812 and his grandfather was a soldier with General Washington at Valley Forge. After being in Winnebago City about ten years he moved to Wells in 1886 or 1887 where he practiced until after 1895. He later moved to Amboy where he stayed a few years.[4,6,11]

John L. Livingston

John L. Livingston came to Wells, about 1891, the time of Doctor Straw's death. He left Wells in 1899 and went to Washington State where he went into the banking business. He had been a Methodist preacher before studying medicine, and there seems some doubt as to the quality of his medical education. He died at Long Beach in 1940 at the age of eighty-eight.[1]

Frederick Tillier

Frederick Tillier, a native of Norway, graduated from the University of King Frederick, Christiana, Norway, in 1888. He obtained a Minnesota license in 1891. He located in Blue Earth City in 1896 where he practiced for a few years. No further record is available.[1,19,23]

John Aaron Broberg

John Aaron Broberg was born in Sweden, July 5, 1862. He came to America with his parents when four and a half years old, settling in Wisconsin. He received a B.A. degree from Valparaiso University in 1888 and an M.D. degree from Michigan University in 1892. The same year he started practice in Delavan, following Doctor Mikkelsen who had moved to Wells. In 1899 he moved to Blue Earth City where he was associated with Dr. F. N. Hunt for some years. He still (1942) lives in Blue Earth but is not engaged in active practice.

Doctor Broberg was a physician of the highest type, honorable in all respects and acquired a considerable property by careful investments and frugal saving. He invested for years in second mortgages bearing a high rate of interest. Several years before the depression he quietly began selling these mortgages. He sold at any price he could get. The bankers of the community and others thought he was crazy but he said nothing, cleaned up and invested in Government bonds. When the crash came he was in a good position financially while the critics were situated otherwise. Doctor Broberg had an uncanny ability in making good investments.

As a physician, he made his money the hard way—no surgery but long drives and much obstetrics. He took poor care of himself, riding in open rigs with wild unbroken horses. As a collector he never had an equal. He could collect from those who owed every other doctor in the community. It was this ability that made him a wealthy man, together with his frugal habits.

He was president of the school board for many years and used the same good business principles as in his own affairs. He was a highly accomplished linguist being able to speak fluently and read the Scandinavian languages, German, French and Spanish. He was also a Greek and Latin scholar. As a speaker, he also had an entertaining manner and many thought that he should have been a college instructor.

Doctor and Mrs. Broberg live at Blue Earth (1942). They have two daughters, one a practicing physician.[17,19]

Peter F. Holm

Peter F. Holm was born in 1872. He graduated from the Watertown, S. D., high school and from Bellevue Hospital Medical College in 1898. He spent a year in Hackensack General Hospital and located in Wells, May 1, 1899. Doctor Holm has carried on a large general practice ever since, a period of over forty years. He retired several years ago but on July, 1942, reëntered practice at Wells to help out during the war and release other younger men for service.[6,17]

John W. Kamrar

John W. Kamrar, a druggist, was born in Blue Earth, November 14, 1865. When a boy he moved with his parents to Seeley Township in the eastern part of the county. There he attended school in a log schoolhouse. His father, Henry Kamrar, was the first blacksmith in the county and hauled his tools from Saint Paul by team and wagon. As a boy his job was herding cattle and he made several trips across country to Montana and the Dakotas with herds of cattle and horses.

After getting the education available in a frontier village, Mr. Kamrar entered the drug store of Schuler and Way. There he learned the drug business which he carried on for over fifty years. After being in this store for seven years he and Dr. A. J. Franklin formed a partnership in the drug business which they carried on for several years. About 1896 Mr. Kamrar built a new building and in it ran his drug store until failing health caused him to sell in 1940.

His first wife was Mamie T. Temple, daughter of Frank Temple, one of the oldest settlers along the river north of Blue Earth. There are two daughters, Harriet and Frances. Mrs. Kamrar died May 28, 1933, after a long illness. On September 15, 1934, he married Jenivieve Turner.

While John Kamrar is not a physician, no medical history of Faribault County would be complete unless his name were mentioned. In the early days the druggists were depended upon in many ways in sickness. With doctors scarce and away so much on long trips, it was not at all uncommon for druggists to prescribe for and give temporary treatment for acute illness and accidents. Mr. Kamrar did a great deal of this as necessary. He was an expert anesthetist and gave chloroform and ether for many operations, such as fractures, which needed more care than the doctor alone could give. The doctor had his office in the back of the drug store and the druggist acted also as office girl, collector, et cetera.

Mr. Kamrar had the reputation of knowing more people than any one in the county, and he knew them by their first names. He was a prominent figure in many civic affairs, and was quite a hunter, but his hobby was horses and he especially enjoyed riding, at which, due to the years he spent in the saddle, he was an expert.

Although not in the best of health at this time, Mr. Kamrar is active. He has for years collected photographs of old settlers and has the largest collection in this part of the state.

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38. Communication: Miss Helen Couper, King Cole Hotel, Minneapolis, Minn.
39. Communication: Mrs. J. E. Stauffer (Kate B. Holley), 3007 Hoyt Ave., Everett, Wash.
40. History of Puget Sound Country.
41. Communication: Mr. W. H. Ogden, Floral City, Florida.
42. Communication: Fred V. Cummings, Blue Earth, Minn., druggist since the early '90's.
43. Communication: Mrs. E. S. Macleod (Esther Smart), 436 Landfair Ave., W. Los Angeles,

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THE TREATMENT OF THE TUBERCULOUS WOMAN DURING PREGNANCY

Pregnancy was advised at one period as a preventive or curative measure. Later the opposite course was advocated and the therapeutic abortions were advised in all cases where the pregnancy was discovered before the fifth month.

Tuberculosis is an infectious disease which annually kills thousands of women of childbearing age even though pregnancy does not exist. A study of tuberculous women, both pregnant and nonpregnant, was undertaken directing the main effort of therapy against the diseased process rather than against the normal physiological process to the end that the tuberculous pregnant woman could go to full term without interfering with her recovery from tuberculosis.

The woman with active tuberculosis should have bed rest plus such additional methods of treatment as pneumothorax and other collapse therapy which would be used if pregnancy were not present. Following labor more intensive treatment may be indicated to prevent a spread of the disease. Therapeutic abortion should be done only if a condition is found, other than the tuberculosis, to warrant it.

The woman with an arrested case of tuberculosis who becomes pregnant after leaving the sanatorium should receive more careful prenatal care than if tuberculosis did not exist. Many return to the sanatorium for care. Treatment varies with the condition. In general they receive modified bed rest for two or three months prior to delivery and strict bed rest for a month or six weeks following delivery. They are then allowed some activity and sent home when their babies are about three months old. The babies are isolated in the nursery until this time. Results in a series of cases extending over a nineteen-year period show that among ninety-two pregnant women who were studied 21 per cent died, while among 2,230 women of the same age group discharged for the first time from the sanatorium there were 837 deaths or 39 per cent. The group is too small for definite conclusions but it does seem to indicate that when tuberculosis is properly treated pregnancy does not adversely affect it. The higher death rate in the nonpregnant group is unexplained.

Treatment of the pregnant woman with tuberculosis by the most modern means of combating the disease, together with equally modern prenatal care, apparently offers her as good a chance for recovery from her tuberculosis as though pregnancy did not exist.—"The Treatment of the Tuberculous Woman During Pregnancy," E. S. Mariette, M.D., Leonard M. Larson, M.D., J. C. Litzenberg, M.D., *American Journal of the Medical Sciences*, June, 1942. Tuberculosis Abstract, July, 1944.

President's Letter

EXAMINING VETERAN PATIENTS

The appeal of Veterans' Administration officials for aid from the physicians of the state in providing diagnostic services for disabled veterans, noted elsewhere in this issue, should have immediate and wholehearted response from physicians in private practice.

The number of veterans eligible for such service, following this war, will dwarf by many thousands the number handled after World War 1.

New facilities contemplated or under construction are confined chiefly to new hospital beds. But many veterans who do not require hospital beds will need repeated physical examination and diagnostic service of all kinds. To handle all of this service at Fort Snelling, a new unit and separate staff will be required, regional officials believe.

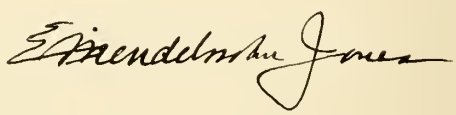
Furthermore, veterans will have to be brought in from all parts of the state and housed here for the sole purpose of examination, and then returned to their homes, sometimes, at frequent intervals.

It is only common sense that such diagnostic work should be done near the veterans' own homes where facilities are already in existence and civilian physicians can provide the service.

The members of the Minnesota State Medical Association will coöperate in every possible way to see that the men who have borne the burden of combat on many fronts in this global war have the best medical service it is possible to give them when they come home again.

This is a chance to provide an important part of that service, in coöperation with Veterans' Administration authorities, and at the same time to avoid any unnecessary building of government establishments.

Every doctor should be willing to volunteer his services for this work.



President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

LANATOSIDE C (CEDILANID)

THE heart drug Lanatoside C, marketed under the name of Cedilanid, is coming to be recognized as a most valuable adjunct in cardiac therapy.

Lanatoside C is considered to be the most active and least toxic of the three cardioactive glucosides contained in digitalis lanata. It is a crystalline substance which has no chemical relationship to the glucosides of digitalis purpurea but is similar in its action on the heart. Lanatoside C has the advantage over digitalis purpurea in that it does not vary in strength, does not, therefore, require biological assay, and its dosage is determined in milligrams. This permits more accurate and safer dosage although individual variations in reaction to drugs in general must still be taken into consideration in the case of this drug as well as in all others.

The most extensive clinical investigation of Lanatoside C was made by Fahr and LaDue[1] at the University of Minnesota Medical School. Another report on the clinical use of the drug by Sokolow and Chamberlain[2] confirms the favorable report of its clinical value, particularly in its rapid effect on decompensated hearts on intravenous administration.

Lanatoside C is produced by the Sandoz Clinical Works under the trade name of Cedilanid and comes in solution 0.2 mg. per c.c. for intravenous use and in tablets of 0.5 mg. for oral administration.

As a result of clinical trial, Fahr and LaDue recommend 8 c.c. of the solution intravenously for most prompt action while Solokow and Chamberlain suggest 6 c.c. to be followed with 2 c.c. every three or four hours as indicated. Rapid decompensated hearts, whether fibrillating or not, were promptly slowed, frequently in a few minutes. In a relatively high percentage of cases of fibrillation, the rhythm was corrected to a normal sinus type. The tablets may be given orally in a dosage of 3.5 mg. in one dose, to be followed in twelve or twenty-four hours by 2.5 mg. more. A maintenance dose varies from one to five tablets (.5 to 2.5 mg.) per day or may be met with ordinary digitalis preparations.

Lanatoside C given intravenously (similar to strophanthin) accomplishes full digitalization so promptly and slows a rapid heart rate due to various causes so quickly that it is being used more and more not only in emergencies but routinely in many hospitals as a timesaver in hospitalization.

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POSTWAR MEDICAL SERVICE

A CONSTRUCTIVE move instigated by Dr. E. Mendelssohn Jones, President of the State Medical Association, has been the appointment of a committee on Postwar Medical Service. As stated in Doctor Jones' presidential address which appears in this issue, the medical profession of the state has responsibilities which require an aggressive and not passive attitude in promoting better medical care for the citizens of Minnesota after the war.

With this in mind, this newly appointed committee on Postwar Medical Service is collecting factual data about every district in the state—population, present and prewar supply of physicians, postwar need of physicians and hospitals, etc. A questionnaire is also being sent to the 1,400 doctors from Minnesota who are in the armed services to ascertain their plans and wishes after the war—whether they plan to remain in service or return to their former locations, whether they wish to have further hospital training or other postgraduate work, and whether they prefer to locate in a metropolitan or rural area.

Thus will the Committee on Postwar Medical Service be able to assist physicians from Minnesota now in service in finding desirable locations, being in possession of information as to localities in need of additional practitioners and spe-

cialists. The success of the effort to have a planned program will depend largely on the response and coöperation of local county societies and physicians contacted in service.

Interesting in this connection is the announcement that as a result of a survey made recently by the American Hospital Association, there will probably be a billion dollar expansion of non-federal hospitals after the war. About 50 per cent of hospitals reporting have some plan for expansion; some already have the funds needed, while others will attempt to raise money from private financing, public campaigns or subscriptions. Others will seek assistance of governmental funds.

SOCIAL SECURITY PLANK OF THE REPUBLICAN PLATFORM

Minnesota physicians will be especially interested in the background of the plank on health which was written into the Republican platform and unanimously accepted by the convention at Chicago.

Actually the statement was conceived and written by State Senator J. V. ("Vin") Weber of Slayton who was one of Minnesota's two members on the Resolutions Committee, Mrs. F. Peavey Heffelfinger of Minneapolis being the other one. Senator Weber presented his statement before the Framing Committee of which Senator Robert P. Taft was chairman where it was accepted unanimously, as presented.

The complete declaration of policy on social security, of which Senator Weber's statement formed a part, is reprinted below for the benefit of physicians who may have overlooked it and because it embodies prevailing medical thought on problems of social security, generally, and on government participation in programs related to health and medicine.

Under the heading of social security the platform states:

Our goal is to prevent hardship and poverty in America. That goal is attainable by reason of the productive ability of free American labor, industry and agriculture, if supplemented by a system of social security on sound principles.

We pledge our support of the following:

1. Extension of the existing old age insurance and unemployment insurance systems to all employes not already covered.

2. The return of the public employment-office system to the states at the earliest possible time, financed as before Pearl Harbor.

3. A careful study of federal-state programs for maternal and child health, dependent children and assistance to the blind with a view to strengthening these programs.

4. Continuation of these and other programs relating to health and the stimulation by federal aid of state plans to make medical and hospital service available to those in need without disturbing the doctor-patient relationship or socializing medicine.

5. The stimulation of state and local plans to provide decent, low cost housing, properly financed by the Federal Housing Administration, or otherwise, when such housing cannot be supplied or financed by private sources.

REPORT OF DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION

Chicago, June 12-16, 1944

The 97th meeting of the American Medical Association in Chicago showed a total registration of 7,284. Annually a distinguished service award is voted by the House of Delegates to an outstanding physician. This year it was awarded to Dr. George Dock of Pasadena, California, distinguished medical educator and well known to many medical men in this region as professor of medicine at the University of Michigan from 1891 to 1908. Dr. Dock's career as a teacher in medicine has been outstanding and the award met with general approval and enthusiasm among the delegates.

The scientific program and exhibit were very interesting. They demonstrated that the war effort has not, in any way, dampened the zeal for scientific advancement among members of the medical profession.

The President, Dr. Paullin, called particular attention to the wartime graduate medical meetings for medical men in the services. The teaching staff consists of thirty consultants and 1,650 teachers who visit Army and Navy hospitals all over the country and give programs of clinics, ward rounds, lectures, demonstrations, round-table discussions and clinical pathological conferences covering the entire field of medicine.

The Postwar Planning Committee has to do with the desires and plans of medical men returning home after the war. It is designed to assist in arranging for postgraduate work and in the location of these physicians when the war is over. An office for this purpose has been set up at the headquarters in Chicago and it should be of great personal assistance to men who want information both on educational opportunities and on locations for practice after the war.

The action of the Government in overruling medical opinion and deciding that premedical students shall no longer be deferred, but are to be inducted into the Armed Forces, presents a serious problem of intern shortage a few years hence. According to Dr. Lahey, we shall have a shortage of 2,000 doctors in 1948 and 1949. In addition, many medical schools may be obliged to close for lack of students.

Dr. Kretschmer made the following statement:

"I believe it is incumbent on every physician in this country to devote at least two hours per day to educating the people in his community as to the significance of the Wagner Bill which would result in the deterioration of medical service, the limitation in the choice of physician and increased taxes."

The report of the Secretary showed that, on April 1, 1944, there were 124,452 members of the American Medical Association of whom 69,304 were Fellows. Income from all sources was larger in 1943 than in any previous year, the net gain being $18,873. Group Life Insurance is provided for all American Medical Association employes and an annuity plan provides annuities for all over sixty-five. Circulation of *The Journal* in 1943 was larger than ever before.

The work of the various councils and bureaus is so extensive that we can merely list them by name:

Pharmacy and Chemistry
Physical Therapy
Foods and Nutrition
Industrial Health
Health Education
Legal Medicine and Legislation
Medical Economics
Investigation
Laboratory
Library
Judicial
Medical Education and Hospitals
Scientific Assembly
Medical Service and Public Relations

The Council on Pharmacy and Chemistry has entered its fortieth year of service. This Council sent out 46,000 copies of its various publications in 1943.

A resolution was presented, but disapproved, providing for a minimum of two delegates to the American Medical Association from all component state societies instead of the present minimum of one.

Another resolution with reference to the extended tuberculosis program of the U. S. Public Health Service (since passed by Congress) expressed the definite feeling of the delegates that all such programs might properly be guided by the Federal Government but that responsibility and power to act should remain with the states.

As to the War Participation Committees requested of the states, only 20 such state committees have been organized of which, however, Minnesota is one.

A questionnaire has been sent out by the Committee on Postwar Medical Service to 3,000 physicians in the Armed Forces and will be sent, no doubt, to all of the 50,000 doctors now serving their country. See *The Journal of the American Medical Association* for June 24, for a full account of the work of this committee.

All members are urged, in fact, to follow all issues of *The Journal of the American Medical Association* closely for details, not only on postwar medical services but on all matters affecting medicine today. In Industrial Health, especially, the American Medical Association is making great strides, and reports on this subject should be carefully read.

Formation of a Speakers' Bureau under sponsorship of the Board of Trustees was directed by the delegates. These speakers are to be available for all regions of the United States and the bureau is to be made up of many men, instead of one, as spokesmen for the American Medical Association.

A resolution was introduced by the California delegation to make Dr. Olin West Secretary-Emeritus for life. This resolution was not approved and at the final session of the House of Delegates, Dr. West was re-elected secretary. A second resolution from the California delegation recommended that the Board of Trustees replace the present editor of *The Journal of the American Medical Association*. It is worthwhile to quote the findings of the Reference Committee on these two resolutions:

"Never before has American medicine been so needful as now of unity. The desire to extend the high quality of medical service to all of the people at a reasonable cost is the objective sought by all of us. Your committee is convinced that this can be attained more certainly if physicians throughout the nation would give their loyalty and support to those selected by this House of Delegates as members of the Board of Trustees and to the representatives selected by the Board itself.

"Your committee commends the loyalty and efficiency with which these officers have for many years served the Association in carrying out the policies established by the House of Delegates. Your committee would also commend the Board of Trustees of the Association for its judgment and wisdom in the management of the affairs of the Association.

"Therefore the Reference Committee on Executive Session recommends that these resolutions be not approved."

The usual plea which has been urged since 1876, was voiced by the delegates once more, for a Department of Health, headed by a member of the cabinet, in which all federal activities on health, except the medical departments of the Army and Navy, could be coordinated.

The House of Delegates was addressed at various times by Dr. J. E. Paullin, president; Dr. H. L. Kretschmer, president-elect; Major General Grant, Air Surgeon; Major General Kirk, Surgeon General of the Army; Lieut. General Robert Kho-Sheng-Lim of the Chinese Army; Vice Admiral McIntyre, Surgeon General of the Navy; and Dr. Ruthy, secretary of the Canadian Medical Society.

The final session of the House of Delegates was largely devoted to the election of officers, resulting as follows:

President-elect: Roger I. Lee, Boston, Mass.
Vice-president: Stanley J. Seeger, Texarkana, Texas.
Treasurer: J. J. Moore, Chicago, Ill.
Speaker of the House: H. H. Shoulders, Nashville, Tenn.
Vice-speaker of the House: R. W. Fouts, Omaha, Neb.
New Trustee: Louis H. Bauer, Hempstead, N. Y.
Re-elected Trustee: Elmer L. Henderson, Louisville, Ky.

Dr. A. W. Adson of Rochester, Minnesota, was elected to the Council on Medical Service and Public Relations.

According to the present schedule, the American Medical Association will meet in New York City in 1945; San Francisco in 1946 and Atlantic City in 1947. The year 1947 marks the 100th anniversary of the American Medical Association.

F. J. Savage, M.D.
A. W. Adson, M.D.
E. W. Hansen, M.D.
Delegates to the American Medical Association

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

DIAGNOSTIC SERVICE FOR VETERANS: NEW PLAN

The confusion, red tape and delay that characterized the handling of sick and wounded veterans in the first years following World War I will not be repeated when the disabled men return from this war.

The Veterans' Administration which replaced the organizations of those early days, is now an old and established part of our system of handling fighting men. Nevertheless, even the present extensive facilities will be taxed, and vast new buildings will be required, if all of the diagnostic work, as well as hospitalization, must be done at Veterans' Administration hospitals.

Already, disabled men from World War II are crowding into the hospitals at Fort Snelling and the regional director and medical officer, here, foresee the need of an entire new building devoted to diagnostic services, alone, unless some other method of handling the load is promptly instituted.

Examiners to be Named

Their plan, as an alternative, is to designate practicing physicians throughout the state as Veterans' Administration examiners. These examiners will be asked to assume the responsibility for physical examinations in their offices; also for special diagnostic procedures of all kinds and for periodic check-ups. For this work they will use already available equipment in the veterans' home communities.

Patients will remain at home except when they are found in need of hospitalization. Travel expense, time, lodging and the equipment and staff needed to do the work at the Veterans' Administration Facility will be eliminated and an important part of the medical services needed by thousands of Minnesota veterans will be done by their own doctors or at medical centers near home.

Volunteers Needed

The Council and officers of the association have approved the Veterans' Administration plan and Administration representatives have already approached a number of physicians in the state. They plan to proceed as rapidly as possible in an effort to be certain that examiners are appointed at key points throughout the state. They will welcome volunteers for this service, however, and every physician who is interested and willing to help is urged to write, immediately, to Col. Leo McGuire, Chief Medical Officer, Veterans' Administration, Minneapolis 6.

It should be pointed out that, as in all government services, paper work is involved in these examinations. The smoothness and satisfactory progress of the plan will depend very much upon the promptness and coöperation of the examiners in the matter of paper work, as well as in the careful examination of veteran patients.

Will Prevent Unnecessary Building

On the other hand, good diagnostic service near home will be a boon to patients. It will save a tremendous amount of the taxpayers' money and it will operate to prevent unnecessary piling up of great government medical plants. Once such plants are built, the inevitable tendency, as everybody knows, is to keep them in use even when the purpose for which they are built has been served.

Coöperation of civilian physicians in this work will help to preserve the private practice of medicine, help the veterans and help to limit government facilities to the functions for which they were intended.

HOSPITALS ARE PLANNING, TOO

It is encouraging to physicians that hospital associations are now devoting time and money to a study of the hospital problems which are bound to become acute after the war.

In America, the voluntary hospital has assumed the largest part of the burden and has set the pace for the hospital care of all civilians. In so doing, it has provided a high standard of care to the majority of the people. It is in the nature of its economic basis, however, that even religious and philanthropic organizations have not been able to extend their services fully in sparsely populated regions, just as well-qualified physicians have not been able to establish themselves in regions where they could not expect adequate financial return. In comparison with the great weight of accomplishment achieved by both physicians and hospitals, working together for the vast majority of the people, this would seem to be a minor problem.

This is the Gap

It becomes a major problem, immediate and acute, however, for the reason that this is the gap which may well let in the flood of government medicine and break down the entire system.

The most urgent need of hospital planners, at the present time, is to work out a method, using subsidies from tax funds, if necessary, to fill that gap without opening the way to federalization of all medical and hospital services.

Physicians are working on the problem; but their efforts must be dovetailed closely with hospital planning, since lack of adequate hospital facilities is one major factor in the reluctance of young men to settle for the practice of medicine in remote districts.

Two-Year Study

It is therefore fortunate that the American Hospital Association which is the over-all organization to which voluntary hospitals of all types belong, has already appropriated $15,000 toward a research program looking toward a formula for filling the gap and for improving the hospital program generally. To this grant the Association recently added an appropriation of $35,000. The Commonwealth Fund has added another $35,000, contingent upon securing the balance of the $100,000 from other sources for a two-year study to determine the adequacy of the whole program and the best method of insuring adequate care to all.

Following are the guiding principles established in 1942 by the American Hospital Association:

1. That the voluntary hospitals of the United States which account for more than 60 per cent of all hospital admissions are a national asset of incalculable value.
2. That the efficiency of these institutions is traceable, in large part, to their freedom of action under local control.
3. That the independence of voluntary hospitals and of hospitals under city, county and other local community control should not be jeopardized by federal legislation.
4. That programs seeking to widen the use of voluntary hospitals and their more perfect adaptation to the needs of the workers of the country through voluntary contributory plans, merit government consideration and support.
5. That a full opportunity should be given to voluntary hospitals of the country through the American Hospitals Association to study proposed legislation affecting hospitals before such legislation is offered to Congress.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. Du Bois, M.D., Secretary

DULUTH WOMAN PLACED ON FIVE-YEAR PROBATION FOR NARCOTIC VIOLATIONS

Re United States of America vs. Edwin H. Whittaker and Dorothy M. Johnson, also known as Mrs. Henry Johnson

On June 12, 1944, Mrs. Dorothy M. Johnson, thirty-nine years of age, 219 W. 5th St., Duluth, was placed on probation for five years in the United States District Court at Minneapolis, following a plea of guilty entered December 8, 1943, by Mrs. Johnson to an indictment charging her and the defendant Whittaker with a conspiracy to violate the Harrison Narcotic Act. Mrs. Johnson was also indicted on two counts of forging narcotic prescriptions. The defendant, Whittaker, a registered pharmacist who operates the Orpheum Pharmacy in Duluth, entered a plea of guilty to the conspiracy indictment on April 1, 1944, and paid a fine of $300.

Both defendants were indicted December 2, 1943, by a Federal Grand Jury following an investigation by the Federal Bureau of Narcotics. The indictment alleged that Mrs. Johnson obtained six prescriptions from three Duluth physicians, five of the prescriptions calling for dilaudid and one prescription calling for morphine sulphate, and that after obtaining the prescriptions, Mrs. Johnson increased the amount for which the prescriptions were written. The indictment charged that this

was done with the knowledge of the defendant Whittaker.

Mrs. Johnson has a previous record in the District Court of St. Louis County where she pleaded guilty on May 7, 1943, to an information charging her with obtaining narcotic drugs under a fictitious name, to-wit: Dorothy Peterson. On May 11, 1943, she was sentenced by the Hon. Mark Nolan, Judge of the District Court, to a term of one year in the Women's Reformatory at Shakopee, the sentence being suspended on condition that the defendant enter Willmar State Hospital for treatment for drug addiction. Mrs. Johnson spent one year at Willmar taking such treatment.

The facts in the case indicate carelessness on the part of certain members of the medical profession at Duluth in writing narcotic prescriptions for Mrs. Johnson. The State Board of Medical Examiners has repeatedly warned the medical profession about the writing of narcotic prescriptions. Under the Harrison Narcotic Law, the various derivatives of opium cannot be dispensed, administered nor prescribed to patients to satisfy their addiction. Narcotic drugs can only be dispensed, administered or prescribed in the bona fide practice of medicine for the relief of an actual ailment of the patient other than drug addiction. For a physician to do otherwise makes the physician also liable to prosecution under the Harrison Narcotic Act.

MINNEAPOLIS WOMAN SENTENCED TO TWO-YEAR TERM FOR CRIMINAL ABORTION

Re State of Minnesota vs. Lillian Kruse Flick

On July 8, 1944, Lillian Kruse Flick, forty years of age, Summit Hotel, Minneapolis, entered a plea of guilty in the District Court of Hennepin County to an information charging her with the crime of abortion. Mrs. Flick also pleaded guilty to having a prior conviction of a felony. She was sentenced by the Hon. Levi M. Hall, Judge of the District Court, to a term of two years in the Women's Reformatory at Shakopee. Mrs. Flick has commenced serving her sentence.

The defendant was arrested June 20, 1944, by Policewomen DeJarlais and Noffke, following the hospitalization of a twenty-six-year-old married woman at Minneapolis General Hospital. The patient was suffering from the after-effects of a criminal abortion and gave a statement naming Mrs. Flick as the one who performed the abortion. The abortion was performed in the room of the defendant at the Summit Hotel. The defendant received $20.00 for the abortion. She first attempted the abortion on April 20, 1944, by using a catheter. The attempt was repeated a week later, and finally, for a third time, on May 25.

The defendant, who has no medical training of any kind, has a previous criminal record under the name of Lillian Kruse, having pleaded guilty in the same Court on November 4, 1938, to a similar charge of abortion. For that crime she served two years in the Women's Reformatory at Shakopee.

MINNEAPOLIS CHIROPRACTOR PLEADS GUILTY TO CRIMINAL ABORTION

Re State of Minnesota vs. Michael J. Koehler

On July 6, 1944, Michael J. Koehler, forty-seven years of age, a licensed chiropractor with offices at 321 Kresge Bldg., Minneapolis, entered a plea of guilty in the District Court of Hennepin County to an information charging him with the crime of abortion. Koehler was sentenced by the Hon. Levi M. Hall, Judge of the District Court, to a term of one year in the Minneapolis Workhouse. Judge Hall gave the defendant until August 7, 1944, to close his office and commence his workhouse sentence. It has also been learned that steps are being taken by the State Board of Chiropractic Examiners requiring the defendant to show cause why his license as a chiropractor should not be revoked.

Koehler was arrested on May 3, 1944, by Detectives Sibbett and Ondrey and Policewomen DeJarlais and Stoltze of the Minneapolis Police Department following the hospitalization of a nineteen-year-old, unmarried girl, who was suffering from the after-effects of a criminal abortion. The girl gave a statement in which she claimed that Koehler allegedly performed a criminal abortion on her on April 29, 1944, by packing the uterus. She also stated that she paid Koehler $150 in cash and that the defendant held her wrist watch as security for another $50.00. The patient's wrist watch was found in the possession of the defendant at the time of his arrest.

The defendant has a previous criminal record, having pleaded guilty on May 24, 1939, in the District Court of Hennepin County, to an information charging him with having in his possession, instruments, articles and medicine for the causing of unlawful abortion. At that time the defendant paid a fine of $150 and was also given a suspended sentence of one year in the Minneapolis Workhouse.

Physicians Licensed July 15, 1944

By Examination June 20, 21, 22, 1944

Brill, Alice Katherine, U. of Syracuse, M.D. 1942, Minneapolis General Hospital, Minneapolis, Minn.

Dafoe, William Alfred, Harvard U., M.D. 1940, Mayo Clinic, Rochester, Minn.

Estrem, Ralph Lauritz, U. of Minn., M.B. 1943, Ancker Hospital, St. Paul, Minn.

Fahey, Martin Matthew, Rush Medical College, U. of Chicago, M.D. 1941, Mayo Clinic, Rochester, Minn.

Hallendorf, Leonard Charles, Oklahoma U., M.D. 1942, Mayo Clinic, Rochester, Minn.

Hardman, Anna Bella Beattie, U. of Toronto, M.D. 1931, Mayo Clinic, Rochester, Minn.

Hardman, William Nelson, U. of Toronto, M.D. 1931, Mayo Clinic, Rochester, Minn.

Hart, George Marcy, Northwestern U., M.B. 1943; M.D. 1944, Mayo Clinic, Rochester, Minn.

Joyce, George Thomas, U. of Minn., M.B. 1943, Ancker Hospital, St. Paul, Minn.

McAnally, Albert Key, Rush Medical College, U. of Chicago, M.D. 1941, Mayo Clinic, Rochester, Minn.

Neuru, Elwin Nathan, Stanford U., M.D. 1943, Mayo Clinic, Rochester, Minn.

Ockuly, Orville Elmer, St. Louis U., M.D. 1942, Mayo Clinic, Rochester, Minn.

Roan, Orville Morton, U. of Minn., M.B. 1943, 3401 16th Ave. S., Minneapolis, Minn.

Schlesselman, Edmond A., U. of Minn., M.B. 1943; M.D. 1943, 407 N. Sixth St., Mankato, Minn.

Schultz, J. Harold, U. of Illinois, M.D. 1943, 3418 Dupont Ave. N., Minneapolis 12, Minn.

Snyder, Clifford Dale, U. of Minn., M.B. 1943; M.D. 1943, Box 291, Elmore, Minn.

Whittaker, Francis Marion, U. of Minn., M.B. 1942, 705 Wash. Ave. S. E., Minneapolis, Minn.

Wilmer, Harry Aron, U. of Minn., M.B. 1940; M.D. 1941, 96 Bedford St. S. E., Minneapolis, Minn.

Wolf, Alfred Henry, Hahnemann, Philadelphia, M.D. 1943, St. Mary's Hospital, Minneapolis, Minn.

By National Board Credentials

Small, John Thomas, McGill U., M.D. 1940, 1025 Harlem Blvd., Rockford, Ill.

By Reciprocity

Englund, DeWitt Walter, U. of Minn., M.B., 1940; M.D. 9141, 2196 Dowell Ave., St. Paul, Minn.

Minneapolis Surgical Society

Meeting of April 6, 1944

The Vice President, Daniel MacDonald, M.D., in the Chair

Secretary John M. Feeney, M.D.

RESECTION OF PANCREAS FOR HYPERINSULINISM

Abstract of Case Report

STANLEY R. MAXEINER, M.D.

Minneapolis, Minnesota

K. M., aged twenty-four, a discharged soldier wounded twice in the South Pacific, experienced his first symptoms when he became unconscious on sentry duty. He was evacuated and experienced several more unconscious attacks during the process of evacuation. He was discharged from the army as an epileptic for want of a better diagnosis.

During his stay in the hospital the patient was hard to arouse in the morning, exhibited lethargy, drowsiness, irritability and was uncoöperative and difficult to manage. He had a persistent low blood sugar and went into coma or stupor whenever the level fell below 45 mg. per cent.

On one occasion he was brought to the hospital in coma with a blood sugar of 28 mg. per cent but regained consciousness immediately following the intravenous injection of glucose.

Thorough study revealed the patient to be a hypoglycemic and typical of hyperinsulinism, the result of islet tumors of the pancreas.

On February 28, 1944, the patient was operated upon with a preoperative diagnosis of islet tumors of the pancreas. The tail and body of the pancreas were removed to the superior mesenteric vessels. The specimen weighed 46 grams and on pathologic examination was found to contain eight islet tumors.

The patient made a completely uneventful recovery and his blood sugar is now stabilized between 99-102 mg. per cent. He has had a complete change in personality, has had no more attacks of coma and has had a gradual and progressive return of weight and strength.

Discussion

Dr. Orwood J. Campbell: I was very much interested in Dr. Maxeiner's report and congratulate him on the splendid results which he obtained.

A few years ago I reported an experience with a case of hypoglycemia from an island tumor to the Minnesota Pathological Society. I do not believe that I reported it to this group.

My patient was a somewhat older man who had had increasingly severe attacks of convulsions and coma with marked personality changes which lead his local doctors to believe that he was a psychopath and needed to be committed to an institution. He had been sent to Minneapolis for this purpose to consult Dr. Hewitt Hannah. The patient was in deep coma when he arrived, in fact his attendants thought he was dying. The immediate and thereafter constant response to intravenous glucose led to the establishment of the correct diagnosis, namely hyperinsulinism.

On operation a single tumor was found in the mid part of the pancreas. This was easily visible and palpable when the pancreas was exposed. We removed the tumor only. The patient made an uneventful convalescence and has remained well.

An interesting feature of his convalescence was the fact that for a period of approximately twelve days he drained clear inactive pancreatic secretion which produced no irritation at all and which suddenly became activated and started to produce digestion of the skin and the margin of the sinus. Fortunately the sinus closed shortly thereafter.

I was also interested in Dr. Maxeiner's reference to Brunswig's advice that in a case of hypoglycemia without palpable or demonstrable island tumor it is advisable to resect the body and tail of the pancreas. This advice is in direct contradiction of the majority opinion as expressed in the literature. The advice has been repeatedly given that it is inadvisable to resect the pancreas unless one can definitely prove the presence of an island tumor.

In one case in which I did resect the pancreas under such conditions the patient obtained no benefit from the procedure whatsoever and continued to show hypoglycemia.

It has been recommended that in the event no tumor can be demonstrated on exploring the pancreas it would be better to close the patient and re-explore at a later date in the hope that the tumor will by that time have become demonstrable.

It is well to remember that all cases of hypoglycemia are not cases of hyperinsulinism. Many very severe types of typoglycemia are due to liver nisufficiency and there are undoubtedly other types of poorly-understood abnormalities of carbohydrate metabolism.

Doctor Maxeiner's case is unusual in the number of definite tumors which were present. While multiple tumors are reported I don't recall any cases in which so many were found.

It should be possible to recognize the condition of hyperinsulinism if the clinician is alert to the symptomatology. Yet pathologists frequently report the presence of undetected island tumors which have caused the death of the patient. Island tumors undoubtedly exist without producing symptoms. The results obtained by the extirpation of the offending tumor or tumors is dramatic and gratifying to the extreme.

Note.—In view of the fact that a complete report of this case together with the literature on islet tumors will be published later, this brief only is submitted for immediate publication.

CONTINUOUS SPINAL ANESTHESIA

LEO C. CULLIGAN, M.D.

Minneapolis, Minnesota

I offer this paper with a certain feeling of apology. I have no illusions about my being one versed in the art of anesthesia. However, I have two reasons for presenting it. In the first place, I should like to express the satisfaction and the feeling of safety that this type of anesthesia has given me after many years of experience with the one dose of spinal anesthesia and, secondly, to demonstrate the method of introducing the soft malleable German silver needle that I have been using. This has made easier for me the only really difficult part of the procedure.

Since January, 1930, when I first joined the surgical service of the Veterans Hospital and including the last four months since I left it, spinal anesthesia was used on 8,140 occasions. To a certain extent we were forced to spinal anesthesia. For, strangely enough, the Veterans Administration which, prior to the war, was probably the largest medical organization in the world, hires no trained anesthetists. General anesthesias are usually given by the younger physicians coming into the service, most of whom had no interest in anesthesia, and who rarely were trained in the use of the modern gas machine. For that reason we used spinal or local anesthesia wherever possible, and we tried to finish under the type of anesthesia with which we started. In this regard, I might say, in passing, how often I have been amazed by the relaxation that can be obtained and the comfort that can be given to a patient by the use of local and splanchnic novocaine as an adjunct to a waning spinal anesthesia, when injected sub-peritoneally, intramuscularly, and into the splanchnic area, by the method of Farr and Maxeiner. Large wheals of novocaine placed into the gastrohepatic and other mesenteries gravitate back into and anesthetize the splanchnic plexus. This has often been most helpful and has pulled us out of what otherwise would have been a tight hole.

This experience has brought us to like the wonderful relaxation and exposure that spinal anesthesia affords. We also learned to respect its dangers. It afforded us an opportunity of evaluating the various agents and methods used in spinal anesthesia.

I think that it is generally conceded that novocaine is the least toxic of the drugs used for this purpose. However, except for short operations and in small doses, it is not a satisfactory anesthetic. When given in the larger doses and when used for high anesthesia, it is usually accompanied by a marked drop in blood pressure that can be both distressing and dangerous.

With the event of the longer-acting anesthetic drugs, metycaine and pontocaine, we felt that our troubles were over. However, we quickly discarded metycaine after an unpleasant experience where we had a bladder paralysis that lasted all too long. Our experience with pontocaine has been on the whole generally good. We felt that there was less blood pressure drop with it than when we used novocaine. However, it was rare that we could finish a gastric resection with it alone, without loss of relaxation and without discomfort to the patient.

In 1939, Lemmon reported 100 cases of what he calls by various names—continuous, serial, fractional, controllable, intermittent spinal anesthesia. I recently had a personal communication from him in which he states that he has now used it in over 4000 cases. Since June of 1943, we have used this method in 105 cases and, for the most part, have been well pleased with it. We have limited its use to what we expected would be a long or difficult case, or to the poor-risk patient where we felt spinal anesthesia would be more suitable than inhalation or intravenous anesthesia. For these cases we have come to feel that this is the answer. When using the usual one-dose spinal anesthetic in this type of case the surgeon is usually up against the dilemma of giving either too heavy a dose with the consequent danger of blood pressure drop or toxic effects on the cord and nerves, or of giving too light a dose that will probably be too short acting, forcing him to resort to a general anesthetic at a time when the patient's reflexes are being stimulated from the site of operation, often resulting in a stormy induction.

Lemmon claims several advantages for continuous spinal and in the main we have found them to be true.

1. When using it, a dose can be given just sufficient to attain the exact level and degree of anesthesia desired.

2. By adding subsequent small doses, anesthesia can be continued as long as necessary. This overcomes one of the real shortcomings of spinal anesthesia. There is no doubt that the trend in surgery is away from speed. Surgeons no longer talk with pride about the speed with which they were able to complete a large operation. With the supportive measures that we now have at our disposal, glucose, plasma and blood, and with better preparation of the patient, we can afford to take the time necessary to do careful surgery. Therefore, an anesthetic which will last as long as we need it is quite essential. This places spinal anesthesia in the same category as inhalation and intravenous anesthesia in this respect.

3. It is generally conceded that the first thirty minutes is the danger period for spinal anesthesia. After an initial blood pressure drop, the regulatory mechanism of the vascular system becomes compensated and the danger of further drops in pressure from subsequent doses is very little unless the patient is going into true shock. Therefore, the small initial dose that continuous spinal makes possible minimizes the danger from the primary blood pressure drop and adds a real factor of safety that one cannot get with the one-dose method when it is given in a quantity necessary to get prolonged relaxation.

4. The smaller initial dose minimizes the danger of toxic effects from absorption of the drug into the systemic circulation in patients unusually sensitive to the drug.

5. Continuous spinal offers another factor of safety that few thought was possible. Most of us felt that after a spinal was given there was no way of get-

ting it out again. In this, however, having the malleable needle continually in the spinal canal, should any symptoms of toxicity or respiratory paralysis develop, it is possible to withdraw the majority of the offending solution. Aspiration of 10 to 15 c.c. of spinal fluid will remove most of the novocaine as the greatest concentration is in the neighborhood of the needle. We have not had to do this as yet but, according to Lemmon, when this is done the nerves will recover their function in about five minutes.

The contraindications to continuous spinal anesthesia are the same as for the one-dose method. However, when we have a patient who is a bad risk for any type of anesthesia, and in whom it is felt that spinal would be safer than a general anesthetic, it may be possible by using very small repeated doses of continuous spinal, to get by without too much shock and blood pressure drop. I will briefly review the accepted contraindications.

1. Diseases of the central nervous system. This, not only because the anesthetic may diminish resistance to the disease, but also because any new symptoms that may arise or any increase in the severity of the disease thereafter, might be attributed by the patient to the anesthetic.

2. Patients who have a fixed aversion to spinal anesthesia should not have it forced upon them.

3. Severe anemia or hemorrhage.

4. Shock or hypotension.

5. Cardiac decompensation is a contraindication to high spinal though not necessarily to low.

6. Patients with coronary disease present a rather serious risk for a sudden drop in blood pressure may change a coronary circulation from one that is barely sufficient to one that is decidedly insufficient.

Finally, one should never give a spinal without having a competent anesthetist at the patient's head, constantly on the alert for any deviation from normal in blood pressure, pulse, respirations and particularly color.

We have followed Lemmon's advice in regard to the drug to use and have limited ourselves to novocaine exclusively. We have felt that inasmuch as this is the least toxic of the drugs used and, if we could repeat and add to it as necessary, that there is no particular advantage in using a longer acting and, *ipso facto,* a more toxic drug. There is, however, no objection to using any of the drugs generally used for spinal anesthesia. They will be safer in continuous spinal than when used as a single dose. The amount of the drug necessary will depend on the individual tolerance of the drug and on the length of the operation. Lemmon cited a case of a woman on whom he had operated twice. On one occasion it was necessary to use 1800 milligrams and on the other 2200 milligrams of novocaine to get a satisfactory anesthesia. From this he concludes that this indicates an individual tolerance and concludes that the dose in any given case is *enough.*

The height of the anesthesia can be regulated by the position of the patient, the volumetric dilution of the anesthetic agent-barbatage, the rate of injection and the total dosage of the drug.

TABLE I. CASES IN WHICH CONTINUOUS SPINAL WAS USED

Cholecystectomy	32
Gastric Resection	28
Appendectomy	18
Abdominal Exploration	9
Nephrectomy	3
Abdomino-perineal Resection	3
Perforated Ulcer Repair	3
Entero-anastomosis	2
Ileostomy	2
Herniotomy	2
Resection Carcinoma Sigmoid	2
Resection Carcinoma Caecum	1
Resection Diverticulum Sigmoid	1
Intestinal Obstruction	1
Separation Adhesions	1
Prostatectomy	1
Resection of Pancreas	1
Exploration Common Duct Stone	1
Cholecyst-jejunostomy	1
Foreign Body of Abdomen	1
Total	105

Lemmon states that when using continuous spinal that he rarely has to resort to vaso-constrictor drugs beyond the usual dose of ephedrin given before the spinal anesthesia is started. He states that because of the small doses given, and by using intravenous glucose and, when necessary, blood, that vaso-constrictors are rarely necessary. While we have found that we do not need them by any means as often as with the one-dose spinal, we keep a very close watch on the blood pressure and do not hesitate to use them as often as there is the slightest need for them. In this way we try to prevent any marked fall in blood pressure with its resultant dangers of anoxia to the heart muscle and to the brain. In our experience, neo-synephrin given in 0.25 c.c. or 2.5 mg. doses will usually quickly restore a blood pressure that has dropped. This may be repeated as often as necessary.

The only real difficulty in continuous spinal is the introduction of the soft flexible German silver needle. Most authors whom I have read, recommend the use of a Sise introducer to puncture the skin and the interspinous ligament. This then is removed and the soft needle is put through the tract that this leaves. I have been using a different technique. Instead of pulling the introducer out I leave it in and make the spinal puncture through the introducer. After spinal fluid is obtained, the introducer is withdrawn from the skin or at least into the subcutaneous fat where it is left to stay hanging around the spinal needle. This withdrawal is a very essential step. One dare not leave the introducer in its original position in the interspinous ligament. Any motion of the patient could easily shear off the soft needle as it emerged through the end of the introducer.

This technique that I have described has three advantages: In the first place, it makes it definitely easier to introduce the needle. One does not have to hunt for the tract that the introducer has left through the in-

terspinous ligament. Secondly, with this method the spinal needle never touches the skin—a definite aid in asepsis. Thirdly, when the puncture is done in this manner, one can use a smaller needle. We now use a No. 19, 4-inch needle whereas before it was necessary to use a No. 18 needle. The smaller needle makes a smaller puncture hole in the dura and as a result, there is less danger of post-spinal headache from leakage of spinal fluid.

In closing, I would say that I feel that continuous spinal anesthesia equipment should be more generally available and should be used in cases where it is indicated.

Discussion

Dr. A. Wm. Friend, Hartford, Connecticut: Doctor Culligan has presented this subject of continuous spinal anesthesia so thoroughly that there is little left to say. He has presented it remarkably well and I am quite in accord with all of his remarks.

I notice that he has been using a 5 per cent solution of novocain.

We have been working with a 1 per cent solution as advocated by Fraser and have been able to get very satisfactory sensory anesthesia without profound motor paralysis particularly of the intercostals; there has been less drop in blood pressure and less of the toxic signs that we see with continuous spinal anesthesia using the 3, 4, and 5 per cent solutions.

I notice Doctor Culligan has been using an introducer, which is very helpful in making the puncture. The Sise introducer which he demonstrated to us cannot be removed from the needle after the needle has been introduced.

The Moore introducer which is more like a grooved director can be removed so that it isn't left hanging on the needle after it has been removed from the interspinous space.

Those of us who are working with continuous spinals all the time know about the special mattress which we have to use. It is a rather thick, heavy and somewhat cumbersome thing to carry around. To get away from that we have been using a continuous caudal needle as suggested to us by Bishop. It has a shorter hub, as you know, and can be introduced more nearly flush with the skin. The continuous caudal needles come in different lengths and one can choose the most suitable length. In that way, by using a couple of folded sheets under the patient's back, we can do away with the special mattress.

Dr. Ralph T. Knight: This has been a very splendid description of continuous spinal anesthesia. Doctor Culligan need never apologize for speaking upon the subject of anesthesia. Whose impressions and experiences with anesthesia should be more helpful than those of a surgeon? I believe that surgeons should do more writing upon this subject.

We have not used as many continuous spinal anesthesias as Dr. Culligan has. Our number is about fifty. We have tried various agents and have ended up by using pontocaine diluted with dextrose and spinal fluid according to the technique of Hand and Nicholson at the Lehey Clinic. We found that we were able to make the anesthesia run more evenly and more smoothly with this agent than with others.

We have used no continuous spinal anesthesia for nearly two years, for various reasons. The heavy mattress was inconvenient. Some of our surgeons complained about it. In much of our biliary tract surgery an x-ray cassette is routinely placed under the patient. This interferes with the continuous spinal technique. Occasionally we had something go wrong technically with the needle, tubing or connections which prevented our repeating injections when desired. Because of these inconveniences we finally started using longer-lasting anesthetics. We adopted nupercaine for all of our longer cases and have used this for the last two years with good satisfaction. This produces spinal anesthesia lasting three and a quarter to three and a half hours.

There are several ways of avoiding the use of the thick-slotted mattress in continuous spinal anesthesia. Dr. Friend mentioned the use of folded sheets. I have found this method very acceptable in some cases. Someone has suggested that it is only necessary to place a pile of three or four folded sheets under the lower ribs and to allow the buttocks to rest upon the table, taking advantage of the lumbar lordosis. I believe it is a little better to place at least a couple of folded sheets under the buttocks also. This will prevent the spinous processes from pinching the spinal needle. Another method is to use an inverted dome with a slot in one side for the exit of the bent needle or tubing. This resembles an observatory dome turned upside down. The patient's back rests upon it and is thus held up off the table.

One other point that might be interesting to consider is how one is to know when more anesthetic is needed. Several ways of determining this have been advocated. First, before the patient is aware of any discomfort, he is likely to become a little more alert and active mentally, as if some stimuli were filtering through from the anesthetized area without the patient really becoming aware of them. Second, a very obvious sign, of course, is discomfort on the part of the patient. Third, another very obvious sign is diminishing relaxation as noted by the surgeon. Fourth, a sign which has been especially helpful to me is the descent of the area of movement in respiration. In order to produce a good relaxation of the abdominal muscles, the lower intercostal nerves must be anesthetized because these nerves supply the abdominal wall. I have found it helpful to slip my hand from time to time down along the side of the chest wall and note the lowest rib that is moving during respiration. This should be the sixth rib. When the next rib below this partakes in the movement it is time to add more anesthetic.

In writing about continuous spinal anesthesia, some have suggested that a certain amount of solution should be injected at certain time intervals. I believe this method should be avoided. Anesthesia is always an individual matter and does not run by the clock.

The fixation of the anesthetic in the nerve tissue is something that has always been talked of. The technique of continuous spinal anesthesia has been very revealing in this respect. The anesthetic never becomes fixed in the nerve tissue. It simply exists in the nerve tissue at the same partial pressure as it exists in the surrounding spinal fluid. When part of it is removed from the spinal fluid it is very quickly removed from the nerve tissue as well. Repeatedly spinal anesthesia has been abruptly terminated by withdrawing spinal fluid. I remember that on one occasion the valve in our connecting tubing became incompetent. The patient suddenly began to complain. I noticed that the syringe had about 10 c.c. more fluid in it than it had had before. All I did was to push this fluid back again into the dural canal and immediately anesthesia was renewed. It is well for us all to remember that the spinal anesthetic does not become fixed in the nerve tissue. It remains there only as it exists in the spinal fluid. If the solution remains to any extent heavier or lighter than the spinal fluid, it may run down or up the spinal canal for quite a long period of time, and anesthesia only remains as long as there is a sufficient concentration of the anesthetic in the spinal fluid.

Dr. O. J. Campbell: I should like to ask Doctor Cul-

ligan whether he varies the site of the puncture according to the height of anesthesia desired.

Dr. Robert F. McGandy: I should like to know what Doctor Culligan means by "high anesthesia."

Dr. L. C. Culligan (closing): By a "high anesthesia" we mean one that is adequate for upper abdominal surgery. As yet we have not used continuous spinal for chest surgery. Lemmon has used it a number of times. I should think that Doctor Friend's suggestion of using a more dilute solution would be a very good idea for getting a higher anesthesia safely. We might be one to interest Doctor Kinsella in using spinal anesthesia for some of his chest surgery.

In regard to the height of the spinal puncture, we usually go between the second and third lumbar vertebrae. For a high anesthesia we often go between first and second. This, however, must be done carefully to avoid injury to the cord.

Regarding the incidence of headaches, I can't say that we have noticed any difference. We have not found that headaches are a serious complication. Only occasionally have we had a headache that would last two weeks. We have had no more headaches with continuous spinal than with one-dose spinal.

In answer to the question of whether novocaine becomes ineffective after prolonged and repeated use, I would say that we have not found this to be the case. The longest operation we have used it for was a gastric resection in a difficult case that lasted six hours. Continuous anesthesia alone was used for about five hours, at which time the patient became restless and we terminated with intravenous sodium pentothal.

As to how to determine when to add more, I might say that it has been a little problem with us. We usually wâited until the patient showed signs of pain. Some patients need it sooner than others. The usual tim is 25 to 30 minutes before the patient will start showing signs of pain. It takes about one and one-half minutes to give him relief after more novocaine is injected. Doctor Knight's method of feeling the intercostal muscles and noticing the return of muscular action demonstrates the art of anesthesia and is one of those little points which only the well-trained, competent anesthetist would think of noticing.

THE USE OF CURARE IN ANESTHESIA

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As has happened so many times in medicine, a plant which has been known principally in folklore has at last come into a very promising clinical use. One of the interesting things which white men found in exploring South America was the fact that Indians made some sort of a concoction out of a weed, plastered it upon their spear heads, and were thereby able to make their spears much more effective against game animals and against their tribal enemies. Curare has been used in the physiological laboratories for a great many years as an agent which paralyzes muscle. Its action is at the myo-neural junction. So far as has yet been found, it has no other effect upon the nervous system. It has not been until recently that the drug has been sufficiently purified so that this action is unaccompanied by a few other toxic effects. Squibb and Company has made such a preparation and has marketed it under the name of Intocostrin. Taking advantage of this purified product, A. E. Bennett used it in the prevention of sprains and fractures which sometimes accompany convulsive shock therapy in psychiatry. He reported this in January, 1940. One year later, in January, 1941, Gray, Spradling and Fechner made a similar report upon the use of curare in modifying metrazol therapy.

With these reports in mind, Dr. Harold R. Griffith, an anesthetist of Montreal, sought to produce better muscular relaxation with lighter general anesthesia by using curare as an adjuvant. His first report was made in July, 1942. He made a second report at the Canadian Medical Association in 1943. Meantime, Dr. Stuart C. Cullen at the University of Iowa had had the same idea ahead of Griffith and had done some work on animals, but was somewhat disappointed and had temporarily abandoned his investigation. After Griffith's first report he set to work in earnest and was able to report a large series of cases in the August, 1943, number of *Surgery*.

We started the use of curare as an adjuvant to general anesthesia at the University of Minnesota Hospitals in May, 1943, and have used it in about 250 cases at the University Hospitals and other hospitals in the Twin Cities.

Like all drugs which anesthetists use, curare has a progressive effect upon different parts of the organism. One group of muscles after another is affected. The muscles of the throat are affected among the earliest, so that the swallowing reflex is impaired. The conscious animal becomes unable to swallow saliva. It tends to run into the larynx and trachea. The animal then becomes unable to cough and thus extrude this foreign material. Muscles of the extremities then become weakened and paralyzed so that the animal is unable to walk and falls down. The muscles of the trunk then lose their tone. Costal breathing becomes impossible, and the abdominal muscles become flaccid. The last effect is then upon the diaphragm, and when this becomes paralyzed respiration of course ceases and death ensues. Each one of these effects takes place in progression as the dose is increased until it reaches the lethal dose.

These same effects take place in man as a patient. When general anesthesia is very light and reflexes of the pharynx and larynx are in evidence with a tendency to pharyngeal and laryngeal spasm and partial respiratory obstruction, one of the first results of curare noticed is the release of this spasm. Curare then becomes a cure for one of the greatest nuisances, and even dangers, in anesthesia. Laryngeal spasm has always been one of the greatest banes of the anesthetist. I believe the time will come when no anesthesia will be started without curare at hand, even if it is for this purpose alone.

The next very evident effect is the relaxation of the abdominal muscles. This relaxation compares very favorably with the relaxation obtained by spinal anesthesia. The abdominal muscles of course are in the same group with the intercostal muscles, being sup-

plied by the same nerves and therefore being susceptible to the same dosage of any general anesthesia, and now susceptible to the same dose of curare. Most surgeons realize with their anesthetists that when complete abdominal relaxation is obtained the intercostal muscles are at the same time paralyzed, so that breathing is then carried on by the diaphragm alone. When now we use curare we must realize that the same thing takes place. Intercostal muscles cease to move when the abdomen is well relaxed. The next step in dosage also paralyzes the diaphragm, and respiration ceases. The dose must be planned and administered so that this last does not happen. However, if the dose should be miscalculated, the patient is well cared for by hand compression of the breathing bag to produce each inspiration. I believe that curare should never be given unless the anesthetist knows that the mask can be fitted perfectly and the jaw and tongue can be well supported, so that this type of artificial respiration can easily be carried on. The alternative of this is the use of an intratracheal tube. One feels perfectly assured of his ability to carry the patient through this event if he has good means of artificial respiration for a period of five to ten minutes. Prostigmine is the drug antidote. We have never even had this drug at hand. We have caused respiratory arrest in three cases. Inasmuch as we quite habitually administer anesthesia by this type of controlled respiration whenever we wish an exceedingly quiet abdomen, the possibility of respiratory arrest by curare has held no fears for us.

The average dose ranges from 60 milligrams to 100 milligrams, according to the size and vigor of the patient and the depth of anesthesia when the curare is administered. It is administered intravenously. The full effect takes place in from forty to sixty seconds. In the beginning of our use of curare, we tried to estimate the dose needed and then to give the whole amount at once. It was in the early cases that we had the three arrests of respiration. It is now our custom to start with no more than 60 milligrams, and in the case of rather frail patients 40 milligrams, then to wait with the needle in the vein for at least one full minute, and if the relaxation does not appear to be sufficeint we add about 20 milligrams at a time until relaxation is complete. A convenient technique is to inject it into an already set-up intravenous drip tubing close to the needle. General anesthesia may be very light so that when the peritoneum is opened the abdominal contents are actually extruded. When curare is administered at this time, it is quite dramatic to see the viscera recede within the peritoneum.

The action of the drug is of rather short duration, and another dose must be administered in from twenty minutes to an hour and a half. The clever anesthetist is able to keep the general anesthesia very light so as to actually have need for additional curare. It is rather easy to allow the administration of the general anesthetic to proceed so that sufficient relaxation is maintained without more curare. This is what we should avoid. The patient recovers from curare without the slightest depression. Our object is to avoid the depressing effect of deep general anesthesia. Although the duration of the curare effect is usually as stated above from twenty to ninety minutes, it should never be repeated according to lapse of time but only as the signs of receding effect appear. Then the second and ensuing doses should be smaller than the first.

The use of this drug will probably greatly alter one of our most popular concepts of anesthesia. It was preached by Creil and many others that the patient was protected from shock by deep anesthesia, which prevented stimuli from reaching the spinal cord and brain from the periphery and thus protected the central nervous system against heavy bombardment. Now that we are able to produce complete relaxation with the patient only very lightly anesthetized, we find that recovery is more uneventful and more immediately complete and that shock is prevented to a greater degree. This helps us to realize that deep general anesthesia is more damaging and more shock-producing than even the trauma of surgery.

Spinal anesthesia has been, and still is, one of our best forms of anesthesia, for the reason that it produces insensibility to pain and utter relaxation without effect upon the inner portions of the spinal cord or upon the brain. It seems that curare bids fair to replace not only a great deal of deep ether anesthesia but a great deal of spinal anesthesia as well.

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Discussion

Dr. J. W. Baird: New drugs, new methods and new techniques are being introduced into the field of anesthesia as in other branches of medicine. These new developments have often proved to be of a distinct advantage to the patient, the surgeon and anesthetist.

The introduction of curare into the field of anesthesia has been the latest and perhaps the most spectacular development. Curare has proved to be an excellent skeletal muscle-relaxing agent.

This profound anesthesia was often of a distinct disadvantage to the patient. The recovery time was prolonged, nausea and vomiting were more common, and the degree of postoperative depression was much greater. We have known for some time that 15 minutes of deep anesthesia is comparable to 2 hours of light anesthesia so far as the production of shock and depression of physiological mechanisms is concerned. From this one can see the distinct advantage of light anesthesia.

Curare has made a light plane of anesthesia effective. We now rely upon curare to produce the muscular relaxation needed rather than a deep plane of anesthesia.

We have been impressed with the postoperative course of the patient following curare. The course of these patients has been very satisfactory. Postoperative shock and depression have been minimized, fewer

postoperative complications have arisen, and their course as a whole has been more satisfactory than in cases where deep anesthesia was used. This is due to the fact that relaxation has been adequate and there has been less trauma of tissue which usually accompanies poor relaxation. The minimal amounts of general anesthetic agent administered has also been an important factor in the improved postoperative course of the patient.

Aside from the excellent muscular relaxation which we are obtaining with curare, we have been impressed with the satisfactory postoperative course of the patient who has received this drug. Several surgeons have remarked, "I don't know whether curare had anything to do with the progress of the patient or not, but his postoperative course has been better than any I have had for some time." I believe that curare plays an important part in this satisfactory progress. Let us analyze the facts, and I believe we can show that this drug has been largely responsible for the satisfactory course of the patient.

Doctor Knight has said, "Deep anesthesia is more shock-producing than surgical trauma." It has been shown that fifteen minutes of deep anesthesia is as shock-producing as two hours of light anesthesia. We also see more postoperative nausea and vomiting in patients who have been subjected to deep anesthesia. This nausea and vomiting alters the fluid balance in the body and thus interferes with other physiological mechanisms.

Before the introduction of curare into the field of anesthesia we were forced to resort to deep stages of anesthesia to obtain the muscular relaxation needed for good operative conditions. At the present time we anesthetize the patient lightly with cyclopropane and rely upon curare to produce muscular relaxation.

This combination, in our opinion, has been largely responsible for the excellent postoperative course of the patient. The surgeon has excellent relaxation which minimizes surgical trauma and shock. Shock is further minimized by using light anesthesia.

We have seen no untoward conditions following the use of curare. It apparently is not shock-producing, and we have experienced very little change in blood pressure and cardiac rate. As a whole, the combination of light inhalation anesthesia and curare has proven highly satisfactory.

Dr. R. C. Webb: I should like to congratulate Doctor Knight on this excellent paper on the use of curare and at the same time state that I have found that the curare was very helpful to me when administered during operation by Doctor Knight or by his associate, Doctor Baird.

During the first three months of this year I have had curare administered in twelve abdominal operations. Six of these have been operations on the gallbladder, and two have been postoperative ventral hernias. In the postoperative ventral hernias in each case I had had the thigh prepared for the use of fascial transplants, but when I had dissected the abdominal wound and prepared for closure, curare was injected and the wound edges came together so easily that it was possible to overlap them and suture them with the greatest ease. Consequently I omitted the use of the fascia. Both cases healed firmly and satisfactorily, and I am sure that the curare was exceedingly helpful.

In the gall-bladder operations I was particularly impressed with the relaxation produced by the curare making the technical procedure as satisfactory as is the case with an ideal spinal anesthesia. The postoperative course in the gall-bladder cases was fully as satisfactory as in the ideal spinal anesthesia patients and I thought that perhaps the patients were somewhat better off because of the fact that they had not been awake during operation. The thought has also occurred to me that in many selected cases the use of curare with gas anesthesia will replace much of the spinal anesthesia now being used. It is my feeling that Doctor Knight and Doctor Baird are making a real contribution in this community by teaching us the use and advantages of curare in selected cases.

Dr. Martin Nordland: I have enjoyed Doctor Knight's and Doctor Baird's discussion tonight. Doctor Knight has administered curare to several of my patients in the past few months. I realized the value of curare in several desperate cases. It proved to be of particular value in two acute gall bladders and two massive incisional hernias. In the hernia cases preparation for fascial stripping from the thigh had been made. With the administration of the curare the abdomen was so relaxed that it was possible to easily overlap the fascial margins and the fascial stripping was unnecessary. In the deep abdomen with diseased gall bladder the reaction to curare is ideal for careful and cautious dissection. With proper supervision, I am confident that it is a good anesthetic. Until its limitations are better known, however, I believe it should only be administered by expert anesthetists.

Dr. O. J. Campbell: I should like to ask Doctor Knight if there is any limit to the amount of intercostrin that can be used over a long period.

Dr. Ivar Sivertsen: After all, this drug that is being employed is the so-called Indian arrow poison of South America. I think we should be careful about letting the average nurse give this drug unless she has been trained in the use of the drug.

I should like to know the amount of drug that can be used in any one case.

Dr. S. R. Maxeiner: When I started with Doctor Farr thirty-four years ago in the days of poorer anesthesia we frequently experienced blue patients, a patient either too widely awake or a patient too profoundly asleep, and as a result there were many unpleasant experiences. These experiences led us to the more extensive use of local and spinal.

In recent years the standards of anesthesia have improved so greatly that I feel we should compliment Doctor Knight and the others who, through their teachings are responsible for these marked improvements.

Dr. Ivar Sivertsen: It works marvelously in the hands of these trained anesthetists, but I think no anesthetist should be allowed to give this drug until he has been trained in its use.

Dr. Ralph T. Knight (closing): Doctor Sivertsen made the remark that this is a poison. That is certainly true. Every drug that the anesthetist uses is a highly potent poison. They are used to their physiological limits, and they should be used with training and with caution. Nobody opens an abdomen without training and without caution and certainly lethal drugs should be used only with training and with caution. This is a city in which there has been only one physician specializing in anesthesia until three months ago, and now there are two. Anesthesia has to be given by those who are available. I think the nurse anesthetists are doing a good job. Most of them feel very cautious, very humble, and very anxious to give very conscientious care to their patients. I think we have as high a grade of nurse anesthetists here as anywhere. I am not in a position to say that they mustn't use such a drug as this. They are learning to use it. We are trying to instill great caution in their use of it.

The largest amount of this drug ever given to any patient by me was 360 mg. (18 c.c.) That was for a gastric resection. I was caught just a little bit unaware of what it would take to complete this case. Bieter, Professor of Pharmacology at the University, says a

physiological dose of purified curare can be repeated every 20 minutes. Most of the doses have lasted much longer than that.

I believe the total dose is not very important. The important point regarding the size of the individual dose is its effect upon the respiration. I believe curare should never be given unless one is prepared to do very adequate, effective artificial respiration, with well-fitting mask and open airway, an oxygen supply, and a breathing bag which may be compressed to fill the lungs and released to allow for expiration.

Please remember that curare is not an anesthetic. It does not cause loss of sensation. It only paralyzes muscles. If the patient has been given a general anesthetic while under the spinal anesthesia, curare is used to very good effect to prolong muscular relaxation when the spinal anesthesia has worn out.

I believe that in operations in the upper regions of the abdomen the patient should be asleep. I would want to be asleep myself under those conditions, in order to avoid nausea and certain discomforts of position and lying upon an unyielding surface.

For our long cases, instead of relying upon the curare for relaxation from the beginning, we use spinal anesthesia produced by nupercaine which lasts at least 3 hours. The patient is put to sleep with gas, either ethylene or cyclopropane, to begin with, and if the procedure continues beyond the duration of the spinal anesthesia produced by nupercaine which lasts at least 3 laxation.

I think the greatest success in good anesthesia lies in knowing how to combine the use of several things during the course of an operation and never having to use any one of them beyond its good and safe application.

MESENTERIC THROMBOSIS

Report of a Case with Recovery

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The occurrence of mesenteric thrombosis is infrequent enough to warrant a report of our case and a brief review of the pertinent literature. Hertzler and Wangensteen report the prognosis as universally grave. However, in the case to be discussed, uneventful recovery followed operation.

Case Report

Mrs. M. M., a thirty-six year-old white woman, entered the hospital August 15, 1943, with a history of acute abdominal pain of two days' duration, generalized over both lower abdominal quadrants. This was accompanied by chills, fever, and vomiting, but no diarrhea. No bowel movement had occurred during this time. An S.S. enema given on admission was returned with no results.

Past history was essentially irrelevant except for an appendectomy thirteen years ago and a cesarean section five months previous to admission.

Physical examination revealed an apprehensive patient with a temperature of 96 F., pulse 130 and thready, and respirations 30 and shallow. Blood pressure on admission was 210/100 but rapidly fell to 80/50. The skin became cold and clammy and the patient went into shock. The abdomen was distended rigid, and tender to palpation; however, no tumor was present. On percussion, dullness was evident, particularly over the flanks.

Urinalysis showed a clear specimen with a 1.021 specific gravity, three plus albumin, three plus sugar, and two plus acetone; microscopically two to three red blood cells and two to five white blood cells per field with many hyaline casts. Examination of the blood gave evidence of hemo-concentration with a hemoglobin of 130 per cent (Sahli), red blood count of 6,500,000 and a white count of 34,600. Differential count showed 93 per cent polymorphonuclear leukocytes and 7 per cent lymphocytes. A tentative diagnosis of intestinal obstruction was made.

Immediate shock treatment was instituted and 250 c.c. of blood plasma were given intravenously, followed by 1,000 c.c. of 5 per cent glucose in normal saline. As soon as the shock was relieved, a laparotomy was done under nitrous oxide and ethylene anesthesia. On entering the peritoneal cavity, a large quantity of bloody fluid was found. A segment of ileum four feet in length (middle part of ileum) was found to be hemorrhagic, edematous, and dilated; the color was a dark purple. Hot abdominal packs applied to the dilated segment failed to produce any change to its color. The portion of the mesentery anchoring the involved part of the ileum was hemorrhagic and revealed thrombosis throughout the secondary arcade of veins, while a constricting band was found at the base of the mesentery. During the operation 500 c.c. of blood and 500 c.c. of normal saline were given, together with 10 minims of neosynephrine to maintain the blood pressure. The involved portion of the intestine was resected and a side-to-side anastomosis done. During the operation, blood pressure fluctuated from 90/70 to 130/90, but the patient's condition improved immediately after the operation when a second blood transfusion was given.

Postoperative treatment consisted in giving 1,000 c.c. of 5 per cent glucose and normal saline every eight hours and gastric (Wangensteen) suction to prevent abdominal distention. The temperature remained at 99 to 100 F. for one week after which it returned to normal. Postoperative course was complicated by the appearance of a focal nephritis the first day after operation when the blood pressure rose to 190/100 and urinalysis gave a specific gravity of 1.022, three plus albumin, 100 red blood cells per field, and many coarse granular casts. Urinary output was about 1,100 c.c. in twenty-four hours. This picture gradually improved and by the eighth day postoperatively the blood pressure returned to normal and the urine was clear. The patient was discharged on the twenty-first day after operation. A checkup of the patient three months later showed that she had gained in weight and felt perfectly well.

Discussion

Occlusion of the mesenteric veins is more commonly seen today than in the past because it is diagnosed earlier. It occurs more frequently in males than in females in a ration of two to one.[9] It prevails during the fifth decade of life and although rare in infants and old individuals, Laufman and Scheinberg[9] report cases in infants of ten days and in patients of 80 years. The site of the thrombosis varies and may occur in the portal vein or any of its tributaries. In a series of twenty-five cases of mesenteric thrombosis, Laufman and Scheinberg[9] found fifteen cases of portal vein occlusions, eight cases of superior mesenteric and only two cases of inferior mesenteric vein occlusions. Wangensteen[13] quoting Trotter (1913) finds that mesenteric thrombosis occurs in 40 per cent and mesenteric embolism in 60 per cent of cases of mesenteric occlusion.

(Continued on Page 672)

From the surgical services of Dr. Thorvald Peterson, Fairview Hospital, Minneapolis. Read by Dr. L. A. Stelter, Minneapolis, by invitation.

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(Continued from Page 670)

The history of mesenteric thrombosis dates back to Tiedemann who reported the first case in 1842. Virchow was the first to describe its pathological picture and reported one case in 1847. The first operation was performed by Elliott in 1895. Jackson, Porter, and Quinby in 1904 reviewed 214 cases reported up to that time while Moore[12] in 1941 reviewed the literature and added eight cases of his own. According to Bell[3] et al. about 770 cases of occlusion of the mesenteric vessels, both arterial and venous, have been collected up to 1940.

The etiology of mesenteric thrombosis has been fairly well established and five main factors are believed to be responsible. They are: (1) peripheral sepsis; (2) portal obstruction; (3) mechanical obstruction; (4) blood dyscrasies; and, (5) trauma. Cokkinis[5] believes the first to be the more frequent cause. Infection may reach the mesenteric veins from any of the organs drained by their branches. Portal obstruction may be caused by pressure on the wall of the vein or cirrhosis of the liver. Blood dyscrasies such as polycythemia rubra, and leukemia are contributing factors. It also appears that abdominal operations play a definite role in causing mesentheric thrombosis. Injury to the mesentery or mesenteric veins during operations and the formation of postoperative adhesions appear to be the most important mechanical means by which thrombosis is initiated. Badin[2] reported a case of appendiceal abscess and extensive inflammation of the mesentery with thrombosis of the mesenteric vein supplying the distal 10 centimeters of the ileum. Microscopically, the intestines show patches of dark blue discoloration which becomes more progressive and assumes the appearance of generalized congestion of the intestinal wall. Red infarction gradually develops with hemorrhage into the lumen of the intestine and bloody fluids extravasates into the peritoneal cavity. The extent of the lesion may vary from an area of several centimeters in length to all of the small and half of the large bowel. However, many cases occur in which portal occlusion alone is present without involvement of any of the large or small intestines. Moore[12] states that vascular disturbance does not always leave permanent structural changes. When the blood supply to the bowel is slowly cut off, there may be no symptoms of occlusion during life and little abnormality of the intestine at autopsy.

The clinical picture of mesenteric thrombosis depends upon the extent of involvement of the mesentery and the intestine. The degree of vascular occlusion and the rapidity of spread probably account for the occurrence of acute and chronic cases of venous thrombosis. In chronic cases, a history of intermittent low abdominal pain, paroxysmal in nature, coming on after meals, and not showing any definite localizations is usually observed. Acute cases usually develop severe colicky abdominal pain, very sudden in onset, which is followed by vomiting and shock. Bell[3] states that chronic cases show a 50 per cent spontaneous recovery. Wangensteen remarks that many cases of mesenteric thrombosis run a fairly mild course, a week often elapsing before an abdominal lesion is suspected. Intestinal obstruction occurs in only a few cases of venous thrombosis. Vomiting is often overshadowed by pain according to Fallis[6] while the reverse is true in obstruction of the small intestine. Vomiting in some cases may relieve the pain. Constipation is often present and the presence of blood on rectal examination confirms the diagnosis. Bloody diarrhea may be present depending upon the extent of hemorrhagic necrosis. The differential diagnosis should include hemorrhagic pancreatitis, acute cholecystitis, perforated peptic ulcer, and acute intestinal obstruction.

Immediate operation is the treatment of choice and the prognosis in most cases is directly proportional to the time elapsing before intervention. The mortality rate is very high, approximately 84 per cent in an operated series of nineteen cases by Whittaker and Pemberton. It can only be reduced by earlier diagnosis and prompt operative intervention. Exteriorization of the involved section of the bowel is inadequate and invariably leads to peritonitis and death. Resection and anastamosis should be done while small localized lesions may be left unoperated.

Summary

A case of venous mesenteric thrombosis is reported and the pertinent literature reviewed. An evaluation of the symptoms of mesenteric thrombosis is offered and an attempt made to clarify the diagnosis. Early surgical intervention is emphasized. The case reported was interesting because of successful operation with recovery and because of the occurrence of a complicating renal picture developing the first day after operation.

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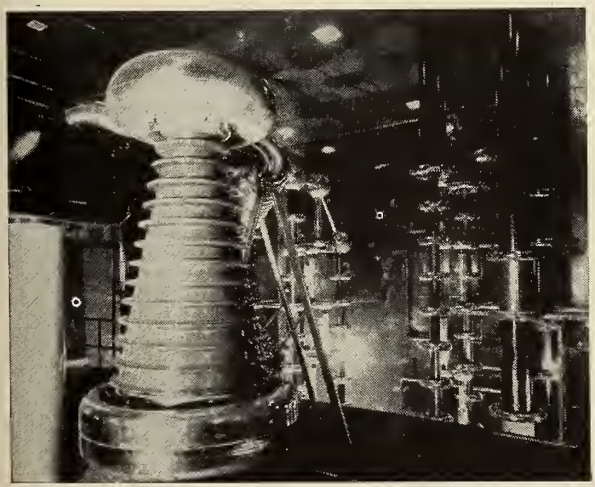


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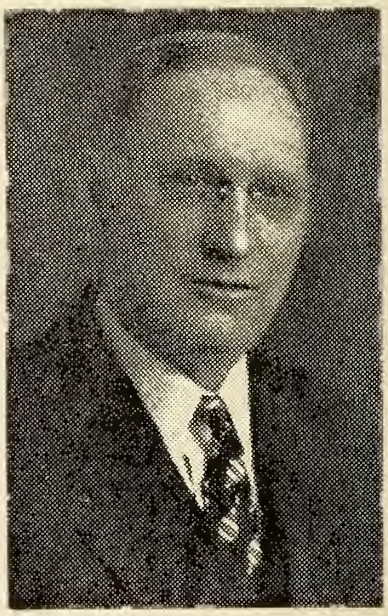
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In Memoriam

DAVID P. MAITLAND

Dr. David P. Maitland, a practitioner at Jackson, Minnesota for over fifty years, died of a heart attack June 25, 1944, at the age of seventy-seven.



Doctor Maitland was born at Sarnia, Ontario, Canada, of Scotch-Irish parentage, August 27, 1866. He attended the high school and collegiate institute at Sarnia before studying medicine at the University of Michigan, where he graduated in 1891. He interned at the Chicago Polyclinic, specializing in internal medicine and pediatrics.

He located in Jackson in 1892. In 1894-1895, he took postgraduate work abroad in eye, ear, nose, and throat, spending most of his time at the University of Berlin.

Doctor Maitland returned to Jackson in 1895, where he continued in general practice being associated with Dr. William C. Portmann and Dr. N. A. Biorn in operating the Jackson Hospital.

For over twenty years he was chairman of the Jackson Board of Health, served as County Coroner for a number of years, and was a past president of the old Jackson County Medical Society. He was a member of the Southwestern Minnesota Medical Society, the Minnesota State, and American Medical Associations. During World War I, he was Examining Physician and a member of the Jackson County Draft Board, and for a number of years also served on the United States Pension Board. During World War II he was examining physician for the local Selective Service Board.

Doctor Maitland was a Mason and for many years held membership in the Knights Templar Commandery

at Fairmont and Osman Temple of the Mystic Shrine, Saint Paul.

He married Bernice M. Thayer of LaCrosse, November 29, 1899.

His son, Dr. Edwin Thayer Maitland, graduated from the University of Minnesota Medical School in 1933, and is now practicing in Jackson, and since 1934 has practiced with his father under the firm name of Drs. Maitland and Maitland.

Doctor Maitland was interested in sports all his life, and while a student at the University of Michigan took an active part in sports. One year he was a member of the Sarnia, Ontario, hose-cart team that set a record for that event at Buffalo, New York. In later years at Jackson, he took an interest in horse racing and was the owner of several fine horses.

* * *

MARTIN BATTS, JR.

Dr. Martin Batts, Jr., died July 8, 1944, at Percy Jones General Hospital, Battle Creek, Michigan, from myelogenous leukemia, with which he was stricken in February, while serving with the Army in New Guinea.

Major Batts was born March 24, 1908 at Grand Rapids, Michigan. He received his M.D. at the University of Michigan, interned at the University of Michigan Hospital, Ann Arbor, and was a resident in surgery at the University of Michigan Hospital in 1934 and 1935. He entered the Mayo Foundation in April, 1935, as a Fellow in Surgery and left in January, 1937, returning to the University of Michigan for three years of specialized study in orthopedic surgery. After receiving his M.S. degree in surgery in 1941, he practiced in Grand Rapids, Michigan, until he entered military service in August, 1942.

* * *

LLOYD THOMAS SUSSEX

Dr. Lloyd T. Sussex, formerly a Fellow in Surgery at the Mayo Foundation, died June 8, 1944, at the Naval Hospital, Farragut, Idaho.

Commander Sussex was born at Hope, North Dakota, February 3, 1899. He received the degree of B.S. in 1923 from the University of North Dakota and M.D. in 1925, from Northwestern University. After interning at Wesley Memorial Hospital, Chicago, from 1925 until 1927, he became a Fellow at the Mayo Foundation. He practiced surgery and obstetrics at Havre, Montana, for a time and then entered service in the Navy, serving in the South Pacific. He was given honorable mention for having operated for seventy-two consecutive hours, during which time he performed operations on 140 wounded men.



Of General Interest

Dr. Bension Scodel, physician at Maynard for the past several years, has accepted a position on the staff of the State Hospital at Fort Wayne, Indiana.

* * *

Dr. E. M. James of Lake Crystal is at Carlisle Barracks, Pennsylvania, where he will receive his preliminary training in the Medical Corps.

* * *

Dr. Henry E. Michelson of Minneapolis was elected president of the Society for Investigative Dermatology at its annual meeting held in Chicago in June.

* * *

Dr. Peter S. Rudie of Duluth was recently promoted from Commander to Captain in the United States Navy. At present he is chief of surgery at the U. S. Naval Hospital, New River, North Carolina.

* * *

Dr. Leonard F. Johnston, formerly of Slayton, has joined the staff of the Winona Clinic. He practiced at Slayton for the past eight years, conducting a small general and lying-in hospital there.

* * *

Dr. Herman E. Hilleboe, former medical unit chief with the State Division of Social Welfare, has been named chief of the Tuberculosis Division of the United States Public Health Service, a newly created post.

* * *

Captain M. G. Ericsson was recently transferred to Fort Snelling, where he expects his assignment to be of a permanent character. Captain Ericsson had practiced medicine in Long Prairie, Minnesota, and Cedar Falls, Iowa, before receiving his military assignment.

* * *

Dr. Charles Frederick Stroebel, former Northfield physician and for the past several years a member of the staff of the Mayo Clinic, Rochester, has been called to active duty in the Medical Corps, with the rank of First Lieutenant. Dr. Stroebel left August 1 for service.

* * *

Dr. I. L. Oliver of Graceville has just returned from Chicago where he took a three weeks' course in surgery at Augustana Hospital. During Dr. Oliver's absence, Dr. David State, senior resident surgeon at University of Minnesota Hospitals, was at the Oliver Clinic.

* * *

Dr. Roger Burkhart, formerly of Rochester, Minnesota, has moved to San Antonio, Texas, where he will

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ave charge of a hospital skin clinic. Dr. Burkhart re-ently achieved the distinction of being the youngest hysician ever to pass the examination of the Ameri-an Board of Dermatologists.

* * *

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 September, 1944 Number 9

MEDICAL MANAGEMENT OF PEPTIC ULCER

J. A. LEPAK, M.D., F.A.C.P.
Saint Paul, Minnesota

THE management of peptic ulcer naturally presupposes a knowledge or, at least, a certain understanding of the fundamental principles involved in the initiation, production and perpetuation of ulcer. Since the discussion is limited to the treatment, obviously only such etiological factors and physiologically disturbing phenomena of motor and secretory functions will be emphasized as may contribute directly to a better comprehension of the medical management of peptic ulcer. To maintain that peptic ulcer is a constitutional disease and, like tuberculosis or diabetes, is more often arrested than cured, aids tremendously in the evaluation and appreciation of the many and diverse etiological theories. The constitution, subject to attack in various degrees, by different agents, and under diverse conditions, may react differently in different individuals, and, consequently, there may be room for broad thinking and much speculation in the quest for the etiology of ulcer.

Etiological Theories

Many theories are offered, therefore, to explain the etiology of peptic ulcer. The most common, however, deal with heredity, vascular disturbances, nervous action, acid factor, trauma, infections, limited tissue defense and toxins.

Draper[2] calls attention to the "tall, lanky, long chested ulcer type of individual." A "duodenal diathesis" occurring "particularly in men of an athletic type with relatively short, broad chest" is described by Hurst.[4] Supporting further the hereditary tendency of ulcer, Eusterman and Balfour[3] state: "We have operated on two or more members of the same family often enough to gain the impression that not only is the familial incidence more frequent than is generally appreciated but that the character of the lesion and its complications is often strikingly similar in the members of a family. This is particularly true in respect to acute perforation and hemorrhages." Following Virchow's original suggestion to explain "funnel-shaped ulcers" by vascular obstruction, many papers have appeared dealing with embolism, thrombosis, and repeated muscular and vascular spasm as the cause of ischemia to the mucous membrane. Reeves[9] has greatly broadened this horizon with his studies of the vessels of the stomach and duodenum and their relation to the ulcer in the filled and empty organs. The neurogenic origin of ulcer has also many enthusiastic advocates. Positive and negative proofs have been advanced to show the nervous relationship. Cushing[1] reported, for example, "Three cases of cerebellar tumor in which the patients died from perforation of the eosophagus, stomach, or duodenum." Experimentally, stimulation of the vagus nerves of the stomach has led to spasm and finally to the production of an ulcer. Severing of the vagus again, has prevented formation of ulcer following certain operations which usually produce an ulcer. The acid factor, notably today, enjoys the greatest popularity. Hyperacidity almost universally and

Read in Symposium on Peptic Ulcer at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 13, 1944.

frequently hypersecretion are found where peptic ulcer exists. The experimental work of Mann[6] and his coworkers very forcibly supports the acid thesis of pathogenesis. Infection is responsible for the recurrence of many chronic ulcers. Streptococci in pure culture isolated by Rosenow[11] from active chronic ulcers and injected in experimental animals produced inflammatory lesions in corresponding parts of the stomach or duodenum. Trauma, either chemical or mechanical, favors ulcer production because it lowers tissue defense. And thus it permits certain toxins, whether exogenous or endogenous, ordinarily inocuous, to become corrosive and destructive to the mucous membranes.

Rivers[10] aptly summarizes the various etiologic considerations when he states: "A combination of local and systemic factors is apparently required to produce a chronic ulcer. Acid and pepsin, chemical and mechanical irritants are always present and frequently damage the mucosa. This damage is usually readily repaired because of the presence in the tissues of a factor of defense against the aggression by the acid: a factor which diminishes as one descends the gastro-intestinal tract. This ability of the tissues to defend themselves against acid is certainly dependent to a considerable extent on systemic factors. Debilitating diseases, respiratory infections, foci of infection, fatigue and increased nervous tension, lower this resistance. The experiments with cinchophen ulcers show clearly that a toxic substance may lower the mucosal resistance, so that the local factors cause general gastritis and later single true ulcer, which, however, heals as soon as the toxic factor is removed. Thus we may coördinate the various theses concerning the local factors (infection, nerve tension, vascular spasm, inborn type) and so develop an understanding of the necessity in prophylaxis and treatment of considering the interrelationship of both of these groups of factors."

Treatment

It is very apparent, then, that in the management of peptic ulcer all the etiologic factors must be taken in consideration in conjunction with the dietetic regimen. Sleep, and rest from any type of emotional or mental anxiety or disturbance are essential. Elimination of focal as well as systemic infections appears imperative for the successful and permanent healing of an ulcer. Toxins, whether emanating from endogenous sources like an uncontrolled diabetes mellitus, toxic goiter or chronic nephritis, or entering from exogenous depots like tobacco, liquor, drugs, skin rashes or burns, must be eliminated or neutralized if proper healing of the ulcer is desired.

The next step might consist of a confidential discussion of certain points relating to the ulcer with the patient. He might be advised that:

1. Duodenal ulcers are always benign, while gastric ulcers may go to malignancy, and, therefore, require careful watching until they are completely healed.
2. Peptic ulcer, like tuberculosis, unless well managed all the time, may recur.
3. Smoking, drinking, and eating a particular food usually interferes with the processes of healing.
4. Permanent healing takes place in about 50 per cent of ulcers that have existed at least 10 years and that the average would be much higher if treatment was sought earlier and carried out more rigidly.
5. Individual resistance to ulcer varies a great deal, hence what one can do, eat, or drink with impunity, another cannot.
6. According to Mayo[7] high intake of water dilutes and thus aids in controlling hyperchlorhydria.
7. Worry, nervous strain, exertion and overwork tend to increase gastric distress, cause pain and reactivate an ulcer.

Having placed the patient in a receptive and understanding mood, an attack can be made directly on the ulcer. One might next ask, when is an ulcer medical and when is it surgical? Generally speaking, an uncomplicated ulcer is medical and an ulcer with complications is surgical. Of course, there are exceptions, but they are few. It is therefore usually unwise to treat medically an ulcer which:

1. Refuses to get or stay well after several good trials.
2. Exists in a patient under forty-five with repeated hemorrhages, or has one massive hemorrhagic in a case over forty-five or continues to ooze.
3. Might be or become malignant.
4. Has perforated.

5. Shows duodenal obstruction or hour-glass stomach due to a cicatrix rather than an edema or inflammation.

6. Is complicated by disturbing diseases like chronic cholecystitis, pancreatitis, appendicitis, et cetera.

Most jejunal ulcers eventually come to surgery also.

Today most patients receiving medical treatment for a simple peptic ulcer are ambulatory. There are, however, some physicians who insist that the patient remain in bed from one to three weeks on a strict medical regimen during which time acidity and retention may be studied and controlled more accurately and the patient be also better educated how to live with the ulcer the rest of his days. Thus Lahey[5] following this plan puts his ulcer patients to bed for three weeks.

Whether the patient is put to bed or not there remain still other measures in the treatment of ulcer which cannot be standardized or cut to a rigid pattern to fit every case. In general, the medical treatment consists of a diet, alkalies, bismuth, antispasmodics and nerve sedatives. If the acidity is controlled, the symptoms are controlled. If complications occur, the regimen is either faulty or badly carried out and the patient must be questioned in detail regarding diet, neutralization of acid, work, strain, stress of family worries, responsibilities, finance, etc. The diet in ambulatory patients consists of three equal meals and three feedings between meals. During the first month a bland diet is prescribed. Raw fruits and vegetables, highly-seasoned foods, spices, vinegar and other richly-flavored dishes are avoided. After one month all well-prepared meats and fruit juices may be taken and generally the diet can be broadened to include a greater variety of foods.

In conjunction with the diet every attempt should be made to relieve spastic conditions of the stomach or bowel, control acidity, and secure nervous stability. Antispasmodics like atropin sulphate grain 1/150, novatropin grain 1/24, or a trasentin tablet three times a day are frequently very useful. Neutralization of the acid with alkalies is slowly giving way to the employment of aluminum solutions, jellies, or other preparations because the latter do not produce alkalosis. Sometimes sedatives like luminal or soporifics like seconal, amytal, or nembutal are absolutely necessary to give the patient the proper rest or sleep.

If the patient has a duodenal ulcer with obstruction or a gastric ulcer with a tendency to hour-glass formation, it is doubtless better to place him in a hospital at once where the stomach can be emptied morning and evening by tube to prevent abnormal food retention, hyperacidity, and hypersecretion. In such cases the hourly Sippy diet is usually followed by some modified addition of alkaline powders. Calcium carbonate, bismuth subcarbonate, and magnesium trisilicate appear the most popular. Some employ the aluminum preparations in conjunction with alkalies, while others resort solely to the aluminum colloidal solutions. If the x-rays show that the obstruction has not yielded in a week or ten days to the above treatment, surgical procedures are usually indicated.

When a massive hemorrhage occurs in a patient under forty-five years of age following Meulengracht's[8] observations, it should be treated medically and fed generously. This procedure reduced the mortality from 5 to 1 per cent, shortened the time of convalescence, caused quicker return of strength, and produced faster regeneration of blood. If the patient, however, has repeated hemorrhages, transfusions may be necessary and surgery is indicated. A hemorrhage, however, in a patient over fifty, is considered surgical, because it is generally assumed that the sclerotic vessels must be ligated in order to stop the bleeding. By repeated transfusions, blood counts, and stool examinations, one can state definitely if the hemorrhage has ceased or continues to ooze. Such patients should be operated without delay, or at least before they are exsanguinated, go into shock, or become grave surgical risks.

In jejunal or some stubborn gastric ulcers, Winkelstein[12,13] and his followers have employed an alkalinized intragastric twenty-four-hour drip method. Through a Rehfuss tube "a solution consisting of milk containing 5 grams of bicarbonate of soda to the quart is allowed to drip into the stomach at the rate of 30 drops a minute continuously throughout the day and night for a period of two to three weeks. Then for another week only during the night while a bland diet is given during the day. Symptoms disappear according to Winkelstein in four to six hours after treatment is initiated. Several cases, not respond-

ing to Sippy diet or with jejunal ulcers were cured both clinically and roentgenologically." Since most such cases eventually come to surgery there is a growing conviction among physicians not to procrastinate or waste too much time with complicated and questionable procedures but to refer them after a short trial and failure to the surgeon.

Summary and Conclusions

1. Peptic ulcer, like tuberculosis or diabetes, requires life-long vigilance and attention.

2. An attempt should be made to eliminate, neutralize, or ineffectuate the commonly accepted or advocated etiological factors in the production and maintenance of a peptic ulcer.

3. Education of the patient in regard to the influence which is exerted by his economic, social, emotional, familial and mental states on the ulcer is imperative.

4. The earlier a patient with a peptic ulcer is discovered, the more likely after appropriate treatment will the ulcer remain dormant.

5. A medical regimen, preferably ambulatory, is most desirable for the simple peptic ulcer.

6. Complications of peptic ulcer are usually surgical.

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SURGICAL TREATMENT OF PEPTIC ULCER

M. G. GILLESPIE, M.D.
Duluth, Minnesota

FEW subjects have been more widely dealt with in medical literature than peptic ulcer. This is due to the fact that the ultimate cause of ulcer is not yet known, and we are still groping for a better understanding of its medical and surgical treatment. Therefore, this symposium is not expected to resolve all the facts in regard to ulcer. Its purpose will be to present the current facts and outline the present concepts of treatment.

The importance of a wartime symposium on gastroduodenal ulcer is emphasized because disorders of the digestive tract today are one of the most important medical problems of the war. Although contemporary writers convey the impression that the high incidence of gastric and duodenal ulcer has been a development since 1918, Eusterman and Gage, in a study of Mayo Clinic registrations and Bellevue Hospital admissions since 1915, were unable to prove that the disease has been actually on the increase. One all-important fact, according to Eusterman, is the development of objective methods of diagnosis, in particular, roentgenologic examination which, just prior to, and since 1918, increasingly facilitated the diagnosis of ulcer and made the medical profession correspondingly more ulcer-minded.

It is just sixty years ago that Rydygier (1884) performed the first gastroenterostomy for benign obstruction. It is interesting to note that the first gastroenterostomy performed in Duluth was by Magie in 1895. Marginal ulcer was first described forty-five years ago by Braun (1899).

During the early part of this century, the operation of gastroenterostomy was widely publicized. To Moynihan and W. J. Mayo should go great credit for making clear the indications for its employment and the technique of the operation. Gastroenterostomy thus became the most firmly

From the Division of Surgery, The Duluth Clinic, Duluth, Minnesota.

Presented in Symposium on Peptic Ulcer at the Annual Meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 13, 1944.

established surgical operation on the stomach. The percentages of relief of symptoms by gastroenterostomy were variously reported. One of the most significant reports was that by Balfour on the results of operation for duodenal ulcer in physicians. He revealed that 87 per cent of those treated by gastroenterostomy obtained complete relief, and gastrojejunal ulcer occurred in only 2 per cent.

Many European surgeons advocated partial gastrectomy for the treatment of chronic gastroduodenal ulcer because it was recognized that gastroenterostomy did not prevent hemorrhage, ulcer symptoms persisted or recurred, and all too frequently marginal ulcer developed.

Two decades ago the controversy of the prevalence of marginal ulcer in this country came to the fore. According to Lewisohn, the incidence of marginal ulcer was 34 per cent. Lahey and Jordan stated the average incidence in American literature, excluding Lewisohn, was 2 to 5 per cent; and in the German literature 5 to 10 per cent.

Von Haberer and Finsterer in Europe and Berg and Lewisohn in the United States, championed the more radical operation of resection and condemned the more conservative operation of gastroenterostomy. Gradually the concept of radical resection of the stomach for ulcer spread until, in recent years, surgeons, such as Roscoe Graham, McClure, Lahey, Wangensteen, and others, have shown that this is the operation of choice, and that gastroenterostomy should be performed only on exceptional and limited occasions. Moreover, the mortality rate following partial gastrectomy in capable hands was shown to compare very favorably with that of gastroenterostomy. McClure reported 5 per cent; Wangensteen 2 to 3 per cent; Walters, Gray, Priestley, and Counseller 1.5 per cent; Lahey and Marshall 2.7 per cent.

To show the changing character of the surgical procedures as applied to duodenal ulcer over a fifteen-year period at the Mayo Clinic, Walters, Gray, Priestley, and Counseller reported that whereas in 1928 gastroenterostomy was the operation of choice in over 70 per cent of the cases and partial gastrectomy was performed in only 3 or 4 per cent, in 1942 partial gastrectomy was performed in almost 60 per cent of the cases and gastroenterostomy in about 40 per cent.

In discussing the causation of peptic ulcer, the factors of infection, trauma, eating habits, smoking, vascular disease, deficiency states, nervous tension, and constitutional background have been stressed by many writers.

Quoting Wangensteen, "Accumulating evidence indicates clearly that acid is the most important factor in the genesis of ulcer. Effective reduction of gastric acidity is essential for the success of an operative procedure directed at ridding the patient of the ulcer diathesis—the high incidence of recurrent stomal ulcer attending the performance of gastrojejunostomy has stamped it definitely as an unsatisfactory operation. Gastrojejunostomy fails to reduce gastric acidity. So, also, the small gastric resection (excision of pylorus and antrum) fails to reduce gastric acidity effectively and frequently is followed by recurrent stomal ulcers."

The control of gastric acidity, most surgeons now believe, is best accomplished by an extensive gastric resection including the pylorus and antrum.

It is well to remember that duodenal ulcer is primarily a medical condition. The proverbial principle that only the patient who has had nine medical cures should be subjected to surgery still holds a good deal of truth. It is estimated that 80 per cent of duodenal ulcer cases are best handled by medical treatment. In other words, it is only the acute perforated ulcer, the chronic calloused ulcer which is intractible to medical treatment, the penetrating ulcer which is oftentimes associated with bleeding, and lastly, the cicatricial ulcer producing benign pyloric obstruction which require surgical intervention. In this group occur the complications of perforation, hemorrhage, and obstruction which necessitate surgical interference.

On the other hand, gastric ulcer is primarily a surgical problem. Balfour has stated that 75 per cent of these will be best treated by a partial gastrectomy. In selected cases local excision or local excision combined with gastroenterostomy may be indicated.

Although the operative indications are very similar whether the ulcer is duodenal or gastric, there is one great dissimilarity and that is in regard to malignancy. The question of whether the ulcer is benign or malignant is sometimes difficult to evaluate. Walters has shown that carcinomatous ulcers may improve symptomatically as well as roentgenographically under medical

treatment. An entirely accurate differential diagnosis between a benign and malignant gastric ulcer oftentimes cannot be made. Therefore, one must be especially careful in evaluating medical treatment. In selected cases where there is a short history of ulcer and where the benignancy is indicated both on roentgenographic and gastroscopic examination, one is justified in a continuation of medical treatment with the understanding that the lesion is to be reëxamined frequently. In the majority of cases, the lesion will be best treated by an extensive partial gastrectomy assuming that the lesion might be carcinomatous. Judd and Priestley, in a review of 237 cases in which a diagnosis of benign gastric ulcer was made and operation was performed, found carcinoma in 8 per cent. Allen and Welch found on following 277 patients, whose original diagnosis was gastric ulcer, that 14 per cent finally proved to be cancer.

Surgeons are in agreement that partial gastrectomy for benign gastric ulcer gives excellent results. The risk of operation is low—2.5 to 5 per cent—the incidence of the development of gastrojejunal ulcer is minimal and the ultimate results are excellent. Walters and Clagett in the follow-up of 162 cases found that there was no known case where gastrojejunal ulcer developed.

The most dramatic catastrophe of peptic ulcer which necessitates surgical intervention is acute perforation. There is little divergence of opinion as to the surgical management. It is accepted by all that acute perforation is an emergency and that the major aim is to preserve life and that closure of the perforation is imperative. After a delay of six hours the mortality rapidly increases. In a review of the medical literature of the United States, it has been shown that the mortality up to six hours is 7.7 per cent; from six to twelve hours, 30 per cent; from twelve to twenty-four hours, 75 per cent and over twenty-four hours, 63 per cent. Timoney of St. Vincent's Hospital, New York City, in a study of 246 patients operated upon for acute perforation, reported the gross mortality was 19.5 per cent. Thompson, in a study of 500 cases collected from the Charity Services of the Los Angeles hospitals, reported a gross mortality of 40 per cent. Shawan in a group of 389 cases from the Receiving Hospital of Detroit, found a mortality of 24 per cent.

Most surgeons are in agreement that closure of the perforation as soon as possible after it occurs, using spinal anesthesia, preferably reenforcing the closure with a tag of ombentum, and without the employment of drainage is the desirable procedure to follow.

In 1937, Judin of Moscow, U.S.S.R., advocated partial gastrectomy in acutely perforated peptic ulcers. His justification for this seemingly radical procedure was that all too frequently these patients have a continuation of their distress, reactivation of the ulcer occurs, or obstruction develops which necessitates further operation with consequent increased mortality.

In the surgical management of marked organic obstruction due to cicatricial contracture as a result of a long-standing duodenal ulcer, especially if it occurs in the older age group where there is associated hypoacidity, there are many surgeons who still employ gastrojejunostomy as the operative procedure of choice.

Approximately 20 per cent of duodenal ulcers and 25 per cent of gastric ulcer cases have a history of bleeding. Since 1927, when Finsterer advocated a radical resection of the stomach within forty-eight hours for the treatment of acute hemorrhage, and further, since 1939, when Blackford and Cole of Seattle showed in a study of vital statistics that 96 per cent of all deaths from hemorrhage from peptic ulcer were in patients above the age of forty-five, there has developed some question concerning the indications for operation. The patient with an acute hemorrhage, as a rule, is best treated by conservative means. These are almost invariably posterior duodenal ulcers perforating against the head of the pancreas and eroding the pancreaticoduodenal artery. Because of the high mortality which would be almost sure to be associated with such a procedure and in some cases the confusion with a bleeding gastric carcinoma or esophageal varix, it is wise to follow a conservative course.

Repeated hemorrhages are a definite indication for surgical interference. Occasionally acute bleeding will be so persistent that operation must be undertaken. In any case, the operation must be one that makes a direct attack on the bleeding ulcer. This is usually best accomplished by a partial gastrectomy with excision of the ulcer.

The most frequent indication for operation is uncontrolled discomfort and pain. Clinically, this usually represents a male patient who has had recurring attacks of distress for years, on oc-

casion associated with bleeding. He has dieted and taken alkaline powders intermittently with more or less relief. Pathologically, the lesion is usually a posterior penetrating or perforating ulcer against the pancreas. Most surgeons now feel that a partial gastrectomy, removing up to 75 per cent of the stomach together with the pylorus and that portion of the duodenum which contains the ulcer, is the procedure indicated. Sometimes, especially if there is a great deal of induration about the duodenum and the head of the pancreas it is difficult to include the pylorus and the duodenal ulcer in the resection. In these cases an exclusion type of operation (Finsterer exclusion) is indicated. If a Finsterer exclusion operation is undertaken, then it should include an excision of the antral mucosa. As one's experience with gastric surgery widens, he will perform fewer and fewer exclusion types of operation. I have seen death come to a young man from a massive postoperative hemorrhage from a posterior perforating duodenal ulcer which had eroded into the pancreaticoduodenal artery within forty-eight hours after a Finsterer exclusion operation with excision of the antral mucosa. It need not be pointed out that his death would not have occurred if the ulcer had been included in the resection.

There is another fairly large group of cases in which there is a definite indication for surgical intervention and that is the group of cases which have had previous operations upon the duodenum or stomach. The most common operations that have been previously performed are gastrojejunostomy and closure of an acute perforation. It is estimated that 10 per cent of acutely perforated ulcers will require further surgery. The indications for surgery in this group are usually either a recurrence of the ulcer or the presence of organic obstruction.

In those patients who have had a previous gastroenterostomy, the indication for re-operation is usually a persistence or recurrence of the duodenal ulcer, interference in some way with the emptying of the stomach, or the presence of a stomal or gastrojejunal ulcer, or occasionally a gastrocolic fistula. It is reasonable to expect that the mortality rate in this group of cases is going to be higher, especially in the group of gastrojejunal ulcers and gastrocolic fistulae. Of all the benign lesions of the stomach, gastrojejunal ulcer demands the most difficult surgical maneuvers for its cure. It usually involves the taking down of the gastroenterostomy and reëstablishing the normal continuity of the stomach, or in the majority of cases it involves the taking down of the anastomosis and extensive resection of the stomach. Finsterer, in a report of 331 repeated gastric operations, gave a mortality of 11.7 per cent.

Adequate pre-operative care and close personal observation postoperatively, in order to prevent postoperative complications, are almost as important as the operation itself. This is especially true with the patient who is dehydrated or who has lost weight. During the pre-operative period, therefore, one must see that the fluid intake is sufficient, that the blood count, the electrolytic balance, and the blood proteins are near normal.

The anesthetization of the patient is very important. A professional anesthetist is desirable. The maximal amount of relaxation and a minimal amount of motion in the operative field is desirable. During the operation a sufficient amount of blood or blood plasma is given to make up for that which is lost and maintain the pulse and blood pressure on an even keel. A gastroenterostomy tube which is brought down through the anastomosis into the efferent loop during the operation is of great advantage. Besides decompressing the stomach it acts as a guide for fluids which pass through the anastomosis, and I believe also helps to prevent rotation or twisting of the efferent loop. Wangensteen advises the use of a duodenal tube which is brought down through the anastomosis into the proximal duodenal loop. The type of resection employed is usually some modification of the Hofmeister or Polya. Occasionally a Finsterer exclusion type of resection with excision of the antral mucosa will be indicated.

In making the anastomosis one must be careful not to invert too much of the gastric and jejunal wall. The shelf so constructed, magnified by edema which commonly follows, as Wangensteen has pointed out, may cause obstruction with consequent delay in emptying.

At the conclusion of the operation aspiration of the pharynx and trachea is recommended.

Postoperatively, continued suction of the stomach is maintained for a period of three to four days. By this time the stomach usually regains its capacity to empty itself, and then frequent small liquid and semi-solid feedings are begun.

In my experience atelectasis is the most fre-

quent pulmonary complication following gastric surgery. If this is of any extent, bronchial aspiration should be undertaken without delay.

Leakage from a duodenal stump is disastrous. Wound infection rarely occurs.

Results

Walters, Lewis, and Lemon, in a study of results in 212 cases of primary partial gastrectomy (Polya type) for duodenal ulcer, reported a mortality of 1.9 per cent. Anastomotic jejunal ulceration occurred in 2.5 per cent. Of the entire number of patients 83.5 per cent were well without undue restriction of diet or activity; 14 per cent required restriction of diet or activity or both in order to remain in comparatively good health. Of these patients on whom gastric analyses were obtained after operation, two-thirds to four-fifths of those without recurrent ulceration after operation had anacidity.

Friedell, Shaar, and Walters in a paper entitled, "Effects of Gastric Resection on Gastric Acidity," concluded, "—reduction of gastric acidity is obtained in 75 per cent of cases in which gastric resection is performed for primary duodenal ulcer which may be considered as affording a good prognosis since it eliminates the acid factor as an etiological agent."

Allen and Welch in a follow-up study of gastric resection for duodenal ulcer, reported thirty-five of forty-three patients (81 per cent who had partial or subtotal resection) to have excellent results.

Church and Hinton in a paper, "Follow-up Results in Subtotal Gastric Resection for Ulcer," reported 104 cases of subtotal gastrectomy followed for an average of 2.8 years with 65.9 per cent cured, 24.7 per cent benefited, and 9.2 per cent unimproved.

Mage, in a study of recurrent ulceration following subtotal gastrectomy in the treatment of gastroduodenal ulcer, found forty-one recurrent ulcers. There were forty cases of recurrent ulcers (8 per cent) as proved by operation, x-ray, and gross bleeding in 502 cases of subtotal gastrectomy for duodenal ulcer, and only one case of recurrent ulcer in a group of ninety-eight cases of subtotal gastric resection for gastric ulcer.

Lannin, in a paper entitled, "Surgical Treatment of Ulcer," reported in a group of ninety-three patients who had been treated by extensive gastric resection (75 to 80 per cent) between 1939 and 1941 no gastrojejunal ulcer, 75 per cent with excellent results, 14 per cent with good results.

Kiefer, in a paper entitled, "Jejunal Ulcers and Recurrent Hemorrhages After Partial and Subtotal Gastrectomy for Peptic Ulcers," reported in a group of forty gastric ulcer cases no jejunal ulcers and no postoperative hemorrhages. In a group of 173 duodenal ulcer cases jejunal ulcers were proved by operation in 3.4 per cent; jejunal ulcers were diagnosed clinically and by x-ray in 3.4 per cent; postoperative hemorrhage with no demonstrable ulcer in 4.6 per cent.

Lewisohn, in a paper entitled, "Problems in the Surgical Treatment of Chronic Duodenal Ulcers," asks the question, "Has partial gastrectomy completely fulfilled the hopes which were expected from this operation?" Quoting Lewisohn, "Judging the results quite impartially we must confess that such has not been the case. While partial gastrectomy is far superior to gastroenterostomy or pyloroplastic operation, it is not a definite and a complete safeguard against a recurrent ulcer.—At present we feel that when a series of medical treatments have failed, partial gastrectomy affords the best therapeutic method at our disposal. It relieves the patients of many years of suffering, safeguards them against the serious complications of perforation or hemorrhage, and effects a permanent cure in about 90 per cent of the cases."

Summary and Conclusions

1. The surgery of peptic ulcer has again been reviewed.

2. The development of the concept of extensive partial gastrectomy in the surgical treatment of gastroduodenal ulcers has been brought out.

3. Surgery is indicated in only the complicated peptic ulcer case.

4. In acute perforation the procedure of choice is immediate closure under spinal anesthesia, reenforcing the closure with a tag of omentum, and without employing drainage.

5. Gastroenterostomy is still employed by many in the treatment of organic obstruction of the pylorus especially if it is associated with anacidity or hypochlorhydria.

6. Acute hemorrhage is best treated in the majority of cases by conservative methods. When

bleeding is the indication for operation the ulcer must be attacked directly.

7. The most frequent indication for surgical interference is uncontrolled pain due to an ulcer perforating against the pancreas.

8. Malignancy will be found in 10 per cent of gastric ulcer cases.

9. Previous operations upon the stomach increase the mortality rate.

10. Gastrojejunal ulcers and gastrojejunocolic fistulae require the most difficult operative procedures for their cure.

11. The type of operation which will be best employed to bring about the expected result will be some modification of the Hofmeister or Polya type of resection; in a small group of cases the Finsterer exclusion operation with excision of the antral mucosa will be chosen. The mortality rate should be less than 5 per cent.

12. The use of blood or blood plasma during operation is important.

13. Atelectasis is the most frequent pulmonary complication; and when it occurs, bronchial aspiration should be undertaken immediately.

14. In 90 per cent of the cases the ultimate results should be good. Stomal or gastrojejunal ulcers will still occur in, as yet, an undetermined percentage of cases.

15. Extensive gastric resection, including the pylorus and antrum, will give the greatest assurance of comfort, and at the same time carries a reasonable mortality rate for patients with gastroduodenal ulcers.

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THE GROWING PROBLEM OF OLD AGE

Dr. T. J. Woofter of the Federal Security Agency said at a recent meeting of the Milbank Memorial Fund, "In most western nations the rate of reproduction has declined to the point that we can virtually take for granted postwar public concern over the size of the family and the welfare of existing children." He warned, however, that the aging of our population will tend to strengthen the political pressure behind the protection of the aged. *"There is indeed some danger that the services for the aged will be overemphasized," he continued, "to the detriment of the child groups on which our future society will depend."* Even today the pressure of the aged on their children—the young married people of child-bearing age—to keep them at the standard of living to which they are accustomed, prevents these young people from having children of their own.—*Briefs,* June, 1944.

ROENTGENOLOGIC DIAGNOSIS OF PEPTIC ULCER

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ROENTGENOLOGY occupies a field of prime importance in the study of the gastro-intestinal tract. The examination permits a direct visualization of the inner surfaces of these organs, and gives an accurate picture of their contour. By observing the progress of a barium meal we obtain information regarding function. Variation from the normal in contour and function yields information frequently superior to the gross pathological examination.

A good x-ray examination of the stomach and duodenum will demonstrate ulcer with a high degree of accuracy. By a direct visualization of the crater it at once establishes the location of the ulcer as well as the presence or absence of complications which might interfere with function or healing. By analysis of the contour of the crater and its effect on the gastric wall, the benign or malignant nature of the ulcer can be determined fairly accurately. Complications can often be identified, namely, the presence of deep penetration of the ulcer, accessory pocket formation, contracture of the lesser curvature from involvement of the gastro-hepatic ligament, and pyloric or duodenal obstruction. The presence of an abnormal degree of collateral inflammation can be frequently demonstrated. This may resemble the defect produced by malignant infiltration of the gastric wall, and presents this difficulty in differential diagnosis.

The experienced radiologist provides himself with adequate equipment for both fluoroscopy and radiography. He now has at his disposal a convenient motor-driven table which permits fluoroscopy in any desired position. The newest type of screen yields a much clearer image. Spot film devices with facilities for localized compression and rapid switching from fluoroscopic to radiographic exposure permits film demonstration of the lesion exactly as it is seen on the screen. In the radiographic field the newer rotating anode tubes which yield fine detail and permit rapid exposures are of great value and are well worth the additional cost. The use of the Bucky diaphragm is to be discouraged unless the equipment is such that speed of exposure is not sacrificed in favor of greater film contrast. A short exposure is necessary to avoid distortion from motion.

The stomach should be empty at the time of the fluoroscopic examination. A preliminary barium meal may be given five or six hours earlier to determine progress of the meal through the upper intestinal tract, especially if the examination is conducted in the afternoon. The patient should not be subjected to a gastric expression before the roentgen study because of the associated irritation to the throat and esophagus, and the usual retention of some of the secretory meal in the stomach.

A brief inquiry regarding the patient's symptoms precedes the examination. He is then asked to drink about one ounce of the barium suspension. This is observed as it enters the stomach at the cardia and passes along the lesser curvature into the lower portion of the stomach. By palpation the barium is manipulated into the accessible portions of the stomach. In this way the mucosal pattern is visualized. If an ulcer is present it can be identified by the persistence of a lump of barium in the crater, and often by the convergence of congested mucosal folds at the site of the crater. Ulcers on the lesser curvature are best observed in the anteroposterior position. The anterior and posterior walls are studied under compression and by rotation of the patient in the desired direction. By producing pressure over the costal margin the mucosal markings can often be demonstrated high into the upper portion of the stomach.

With the advance of the barium into the duodenum, the observer's attention is directed toward this structure. The duodenal cap is distended under manipulation, and its contour is noted. Direct pressure is then exerted over the cap or on the adjacent tissues to express the barium and reveal the mucosal pattern. This procedure should reveal an ulcer crater or deformity. As the barium passes from the cap into the second and third portions of the duodenum, these areas are carefully observed for ulcer or for any other variation from the normal. The patient is then

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given an additional seven ounces of the barium mixture. This is observed as it is swallowed, in its passage through the esophagus, and as it distends the stomach. The stomach and duodenum are again manipulated until the observer is satisfied with his findings. With tilting of the table the study is continued in the supine and prone positions. This may yield additional information especially regarding the cardia of the stomach, and peristaltic activity. Progress of the advancing meal through the upper small bowel is also noted. If a preliminary six-hour meal was given, the cecum and terminal ilium are usually filled and may be studied at this time. As the occasion arises, spot films are made to record the fluoroscopic findings.

The technique of the examination is varied to suit the demand. If there is retention of food and fluid, it might be advisable to remove this by lavage. In many cases the condition giving rise to the retention can be determined in spite of the presence of foreign material. If necessary, the stomach is reëxamined on the following day after the retained material has been removed. Gastric or duodenal bleeding does not contraindicate roentgen examination. Palpation should be kept at a minimum to avoid exaggeration of bleeding. Slight compression can usually be made without danger. Thus a working diagnosis can often be established to guide treatment. The examination is commonly postponed for a few days or even weeks with the object of avoiding any mechanical exacerbation of the hemorrhage, but delay for several weeks may allow an ulcer to heal and escape detection. The cause of the bleeding may then remain unexplained.

The pylorous may be spastic and fail to respond to manipulation, or to watchful waiting. Favorable action usually results from the inhalation of trethylene (Davies, Rose & Company). A few drops of the solution are placed on a cloth, this is held over the nose, and the patient is asked to breathe deeply three or four times. Fluoroscopic observation is then resumed. Within a comparatively short period of time one will notice the development of increased peristalsis of the stomach and opening of the pylorus. The resulting deep peristaltic waves also help establish the absence of infiltrative rigidity of the gastric wall. This procedure is seldom ineffectual except in marked pyloric obstruction, in which condition it may produce reversed peristalsis. It must not be used while the patient is in the standing position, as syncope might occur. The inhalation is best given with the patient in the right oblique prone position. The drug is only slightly irritating to the nose. One may secure the coöperation of the patient by telling him that he is receiving "smelling salts" to stimulate activity of the stomach.

Obvious obstruction of the outlet of the stomach should warn us against introducing more barium into the stomach than is needed to gain the necessary information. Barium is often difficult to remove from the stomach. If it is allowed to segregate in the lower portion of a dilated viscus, it may complicate the work of the surgeon.

Since the lesser curvature side and the antrum of the stomach are the most frequent sites of peptic ulcer, the examiner's attention is first directed toward these regions. Here palpation is at its best. Ulcer on the lesser curvature can usually be shown in profile so that its contour and immediate environment is open to detailed study and analysis. In the antrum, however, benign ulcer is not uncommonly seen on the anterior or posterior wall, somewhat removed from the curvature, and may be sufficiently large to resemble malignant ulcer. These features are also commonly present in ulcer of the posterior wall of the upper portion of the stomach, where large craters, seen both in profile and "en face," may show evidences of considerable collateral inflammation. Since this type of induration closely resembles that produced by malignant infiltration, differentiation may depend upon therapeutic response to a dietary regime.

Ulcers on the greater curvature side of the stomach are predominantly malignant. Only about 0.5 per cent of benign ulcers are found in this region. Clinical indications of peptic ulcer may be present when the only abnormal roentgen finding is a para-esophageal hernia. The possibility of hidden ulcer in the hernia should not be overlooked. Hemorrhage may be a prominent feature in hernial ulcers, and dietary response may be poor. Ulcer of the lesser curvature side of the stomach, at the incisura angularis or above this level, may be associated with extensive inflammatory reaction in the gastro-hepatic ligament. As the inflammation subsides there is a resulting contracture of the ligament with shortening of the curvature and upward and left-sided displacement of the antrum of the stomach. The

presence of this deformity is evidence that the ulcer is benign. Delayed emptying of the stomach usually results, and the obstruction may be sufficiently marked to defeat any attempts at medical management.

Duodenal ulcer occurs most frequently in the first two centimeters of the duodenum, in the duodenal cap. Under palpation or compression the ulcer crater can be demonstrated in a high percentage of cases, either in profile or "en face." The crater is more easily found before any marked contracture deformity has taken place. In chronic or recurrent cases the distortion may be so marked that the crater is hidden in the edematous folds of the mucous membrane.

About 15 per cent of duodenal ulcers occur beyond the first two centimeters of the duodenum, with about two-thirds of these in the next three centimeters, and one-third beyond this region, but proximal to the papilla of Vater. These ulcers are more frequent on the inner curvature of the duodenal loop. They may be designated as "second portion" duodenal ulcers, or duodenal "concavity" ulcers. Clinically they may be characterized by silent or excessive bleeding, with pain a minor factor or totally absent. They constitute the majority of the cases of fatal duodenal hemorrhage. Roentgenologically they are best demonstrated on films, although the crater as well as rather marked secondary inflammatory changes in the mucosal folds are readily found fluoroscopically. The ulcer is usually fairly large. It is easily projected in profile. The mucosal distortion and spastic contraction of the bowel lumen is marked. Similar mucosal changes may be found in the duodenal loop without a demonstrable crater, leading to the supposition that there is a hidden ulcer, or that the changes are due to a nonulcerating duodenitis. In the presence of unexplained bleeding from the upper gastro-intestinal tract, if the evidences of duodenitis are present, the possibility of hidden ulcer of the second portion of the duodenum must be kept in mind. One must not lose sight of the fact that this is the most frequent cause of fatal gastro-duodenal hemorrhage.

In conclusion one might reiterate that the roentgenologic examination of the stomach and duodenum requires the application of skill and ingenuity. It is a highly accurate procedure, not, however, infallible. It usually demonstrates the existing pathology, and leads to correct therapeutic or surgical procedures, even though interpretation of the roentgenologic findings may at times be faulty in detail. It may be more accurate in its deductions as to the nature of a pathologic lesion than visual or palpatory inspection of the gross surgical specimen. In skilled hands, it is rarely misleading.

CLINICAL ASPECTS OF THE ULCER PROBLEM

With Special Reference to (1) Definition of the Criteria of a Suitable Operation; (2) The Importance of a Short Afferent Loop, and (3) Results of Operation

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Importance of the Acid-peptic Factor in the Genesis of Ulcer

THE ulcer problem is far from a complete and satisfactory therapeutic solution. As Doctor Lepak suggested, the ultimate cause of ulcer in man has not been determined. Nevertheless, the importance of digestion of the gastric or duodenal walls in the causation of ulcer by the acid-peptic gastric juice has been so well established that, one unhesitatingly may say, it is the *sine qua non* of ulcer. Amongst those of us whose stomachs secrete an abundance of free hydrochloric acid, it is difficult to understand what the margin of difference is that determines which of us will develop a clinical ulcer. As Claude Bernard showed almost one hundred years ago, the acid gastric juice can digest away living tissue. Mind you, the viable, vascularized gastric wall is more resistant to digestion than the dead food we ingest. One of my associates, Dr. Fred Kolouch, recently has demonstrated how quickly the injury of an

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acid-peptic digestive mixture can come about upon a mucosal surface, unprotected by the neutralizing influence of the alkaline bile and pancreatic juice. Within a few minutes after the dripping of a solution of gastric juice with pH of 1.2 is commenced upon an exteriorized segment, death of the tissue exposed to this digestive influence may be observed. Furthermore, from such dripping experiments, it becomes readily apparent that, a physiologic, natural acid-peptic juice, obtained from isolated gastric pouches in dogs under the influence of histamine stimulation, exerts a far greater digestive action upon an exposed mucosal surface than does a solution of hydrochloric acid alone of the same pH. That ulcers may be brought about in the intact dogs and other animals by the digestive action of the unremitting torrent of gastric juice secreted under the stimulus of a histamine-beeswax mixture[3] has been described previously.[10,26] The dripping experiment and the production of ulcers with histamine serve to give renewed emphasis and a clearer meaning to the acid factor in the genesis of ulcer pointed out by Mann and Williamson (1923) at an earlier date.

The Importance of Mucosal Rugations in Determining the Site of Ulcer

It is well known that the spontaneous ulcers occurring in man are found largely in the first portion of the duodenum and in the antrum of the stomach. The antrum of the stomach is relatively rugationless when contrasted with the broad mucosal folds of the corpus and fundus. Similarly, the first portion of the duodenum is more like the antrum than the remainder of the duodenum. The circular mucosal folds of the valvulæ conniventes are missing in the first portion of the duodenum. In other words, the segments in which ulcer occurs most frequently are relatively smooth and rugationless. On a bald, smooth mucosal surface, the opportunity for constant, prolonged contact with acid is greater. All areas of rugated gastric mucosa cannot be in constant contact with the acid gastric juice.

Combating the Ulcer Diathesis

In this discussion, it has been conceded by all participants that conservative management is the treatment of election in an uncomplicated ulcer. In other words, surgical treatment begins with medical failures. Most of us who have professed an interest in the ulcer problem have concentrated our efforts on depressing the capacity of the stomach to secrete acid. As our understanding of the items that hedge about the ulcer problem becomes clearer, my own feeling is that we will attach more and more importance to the matter of attempting to effect a greater co-operative harmony between the digestive juices. It was no accident of nature that placed the most acid and the most alkaline juices of the body within a few centimeters of one another in the digestive canal! After all the years of thought and effort expended upon the problem by interested investigators, the primary reason that the problem of ulcer still goes begging for a satisfactory solution is because of the low threshold of response of the acid-peptic secretory mechanism of the stomach to stimuli of all kinds, whether of cephalic, gastric or intestinal origin. Moreover, the response of the pancreas with reference to the secretion of juice rich in buffers is dependent, in large measure, upon the behavior of the stomach. In other words, the fate of the duodenal mucosa with reference to the possibility of autodigestion through the agency of unneutralized gastric juice is suspended in no small degree upon lags obtaining between the appearance of the acid gastric juice in the duodenum and the hormonal response provoked from the pancreas by the presence of that acid gastric juice in the duodenum.

To have one's fate suspended upon so sensitive and responsive an organ as an actively secreting stomach is not a happy state. For the ulcer patient, it is the Damocles sword which may forbode perforation, hemorrhage, obstruction or chronic pain. Whereas Pavlov believed there was no basal secretion evoked from an empty or resting stomach, it has been shown convincingly that the empty stomach continues to secrete; in fact, the patient with an ulcer probably has a stomach which is particularly active in its secretory behavior during the long hours of fast between supper and breakfast. It is probably over this item of uncontrolled night secretion that the medical or the conservative treatment of ulcer breaks down most frequently. The essence of a satisfactory, conservative plan of treatment is *frequent feeding* which, of necessity, must extend through the long hours of the night with the aid of an alarm clock, if need be. In instances of gastric hemorrhage, uncomplicated by obstruction, intragastric drip feeding is the best

agency with which to combat hemorrhage, in that the raising of the pH helps to allay the erosive process.

Recurrent Ulcer—The Cause of Distrust in the Accomplishment of the Surgeon

The lack of confidence of internists, actuarians and the military forces in the accomplishment of the surgeon with the ulcer problem rests upon the empiricism of the surgeon in his wrestle with the problem. For more than fifty years he has been performing operations for ulcer, not knowing exactly what his operations accomplished or what the characteristics of a successful operation for ulcer are. No wonder that the high incidence of recurrent ulcer after operation justified internists, actuarians and the military forces in their distrust of what surgeons affected to be able to accomplish for the patient with an ulcer intractable to dietary management! As Doctor Gillespie indicated, however, the surgeon is departing from his empirical methods and has set about methodically to define the criteria of an acceptable operation for ulcer.

The Criteria of a Satisfactory Operation for Ulcer

Under present limitations of the status of our knowledge of the therapy of ulcer, a successful operation directed at the ulcer diathesis, which in the light of the experience of this clinic does not compromise the future for the patient, embodies the following features:

1. Extensive gastric (three-quarter) resection, including excision of the antral mucosa.
2. Complete devascularization of the lesser curvature with virtual excision of the entire lesser curvature including sacrifice of the left vagal trunk or its major branches.
3. Restoration of gastro-intestinal continuity employing a short afferent loop.

Abundant clinical evidence has accumulated to indicate that leaving 16 to 20 square centimeters of antral mucosa will prejudice the result and invite a recurrent gastrojejunal ulcer,[34] despite performance of an extensive gastric resection. At least that much of the Edkins' hypothesis implying an augmenting or titillating influence of the antral mucosa upon gastric secretion is correct. Yet, a small gastric resection, removing all the antral mucosa is not adequate to thwart the ulcer diathesis. In so-called irremovable or inoperable duodenal ulcer, it has been our practice to do the Finsterer exclusion operation with concomitant exenteration of the antral mucosa. This plan of operation, as outlined previously,[29] depends upon careful resuture of the circular muscle of the residual pyloro-seromuscular cylinder and can be done safely without subsequent hazard of subphrenic abscess; furthermore, this operation (IVA) protects equally well against the ulcer diathesis as the more commonly performed operation in which the pyloric sphincter is sacrificed also (Group III resection). Some surgeons believe that concomitant excision of a duodenal ulcer is necessary to thwart the ulcer diathesis when gastric resection is undertaken; the experience of this clinic, however, suggests that, when the capacity of the stomach to secrete acid is depressed effectively by an extensive gastric resection, it is an item of no consequence whether the ulcer is excised or not.

The Bleeding Ulcer

Doctor Ude's suggestion that the roentgenologist, as well as the pathologist, finds a duodenal ulcer not uncommonly in the second portion of the duodenum is a matter of real interest. Large duodenal ulcer craters frequently do give rise to a good deal of distorsion in the anatomy of the segment just beyond the pylorus. My own experience in operating for duodenal ulcer suggests definitely that most ulcer craters lie just beyond the pylorus. The surgeon as well as the roentgenologist can become confused as to where the pylorus is. As Doctor Ude intimated, the typical bleeding duodenal ulcer causing massive hemorrhage is an ulcer on the posterior duodenal wall, perforating or perforated up against the pancreas. Sudden death from hemorrhage usually is occasioned by erosion of the gastroduodenal artery which lies beneath the posterior duodenal wall and with progression of the erosive process this vessel comes to lie in the bed of the ulcer. Obviously if the surgeon operates to arrest continued hemorrhage, the bleeding vessel in the ulcer crater must be dealt with. Doctor Ude's finding of such ulcers in the second portion of the duodenum does not gainsay the possibility of the surgeon being able to deal with the situation at operation. As a matter of fact, operation for massive hemorrhage from a duodenal ulcer assumes that the surgeon will open the duodenum

deliberately by amputating just beyond the pylorus, find and suture the bleeding point, and close the open duodenum by inverting the anterior wall against the pancreas.[27,29] This is technically a difficult procedure, but in practiced hands it can be accomplished with an adequate and safe duodenal closure. The operation then is concluded by doing a simultaneous three-quarter resection. Whereas concurrent obstruction and hemorrhage constitute a good indication for early operation for the arrest of hemorrhage, in the main, as indicated above, uncomplicated hemorrhage will cease usually with employment of continuous intragastric drip feedings. It is our practice to employ the Varco formula[25] Number 2 for such feedings. If the patient has had a long antecedent story of difficulty prior to admission to hospital for bleeding—in other words, if the indication for gastric resection is good, we frequently proceed with the operation as soon as the bleeding has stopped. The intragastric drip feeding of the Varco formula (high protein and carbohydrate and low fat diet) prepares the patient well for operation and an additional long period of hospitalization prior to operation becomes unnecessary.

Obstruction

In the experience of this clinic, true duodenal stenosis is rare. The usual cause of pyloric obstruction in the presence of a duodenal ulcer is a *perforating* or a *perforated* ulcer.[30] An area of induration occurs about the ulcer bed and this occurrence, together with swelling and edema of the mucosal folds, brings obstruction about. In consequence, obstruction frequently relents under conservative management; even a fairly persistent obstruction, however, may have its origin in the contraction and extrinsic duodenal compression accompanying induration of the ulcer bed and the edema of the mucosal folds. The typical ulcer causing obstruction is a perforated ulcer on the posterior duodenal wall, the pancreas constituting the ulcer bed. In approximately 80 per cent of instances this is the situation found in obstructed duodenal ulcers—just as this is the common location of bleeding ulcers giving rise to massive hemorrhage. In about 15 per cent of instances, the ulcer has perforated into the hepato-duodenal ligament on the superior wall of the duodenum. This is the ulcer which is extremely difficult to deal with surgically, particularly if the crater is very large. It is in such instances that the IVA operation (Finsterer exclusion with exenteration of the antral mucosa) is indicated.[29]

Duodenal ulcers that give rise to free perforation into the peritoneal cavity are invariably found on the anterior wall.

The Problem of the Gastric Ulcer

A number of studies suggest that a gastric ulcer is more amenable to cure by surgery than is the duodenal ulcer—that is, a recurrent stomal ulcer is less likely to follow operation for a gastric ulcer than after operation for duodenal ulcer. Just why this is so has defied explanation. An even more important consideration is the likelihood of mistaking a gastric cancer for a benign gastric ulcer. Wilson and MacCarthy (1913) gave a lively emphasis to this occurrence thirty years ago. In the immediately ensuing years more heat than light was generated by a discussion of the problem of malignancy being engrafted on a benign ulcer. There can be no doubt that such transformation occurs. The more important consideration, however, is that there is great likelihood of confusing one with the other. Allen and Welch of Boston have latterly given much emphasis to this possibility. I would suggest that the likelihood of a persistent gastric ulcer on the lesser curvature of the stomach being malignant approximates 10 per cent. In persistent prepyloric defects, however, the possibility of procrastinating with conservative management for ulcer when, as a matter of fact, malignancy is already present is far greater. Probably the hazard of mistaking a malignancy for an innocent lesion in the prepyloric area is twice that of the lesser curvature lesion or approximately 20 per cent. It becomes evident, therefore, that the roentgenologist, probably more than any other clinician who comes in contact with the ulcer patient, holds the unique responsibility of determining, by the nature of his report, the character of the treatment undertaken. If the roentgenologist lacks confidence in the ability of the surgeons in his group to deal satisfactorily with the situation, one can understand the misgivings which prompt the roentgenologist to report his interpretations in such a manner that the clinician will feel completely justified in procrastinating further with a lesion of doubtful nature. When it is realized, however, that, following excision of the lesion, the pathologist frequently finds it

necessary to reserve opinion on the diagnosis until microscopic sections are available, it becomes apparent that the roentgenologist who professes to be able to distinguish these lesions with almost unfailing accuracy arrogates to himself an extension of vision which only the microscope permits. In clinics where gastric resection is done for ulcer at a risk of 2 to 3 per cent and for gastric cancer at risks not far out of line with this figure, there is no need for the roentgenologist to carry alone the burden of the grave responsibility of differential diagnosis. Earlier operation for many gastric ulcers will lead to earlier recognition of the presence of malignancy.

Occasionally both a gastric and a duodenal lesion are demonstrated by roentgen study. Such a circumstance frequently leads the clinician to decide on the basis of the circumstantial evidence, of simultaneous presence of duodenal and gastric lesions, that the gastric lesion is benign. In the presence of pyloric obstruction, the ability of the roentgenologist to determine whether a given lesion is pre- or postpyloric is notably poor—a circumstance also well known to roentgenologists. Yet, they, too, are not immune from being swayed in their judgment concerning the nature of a gastric lesion when an obstructive postpyloric lesion is demonstrated simultaneously. The experience of finding that a benign and malignant gastric lesion can coexist in the stomach simultaneously, has been frequent enough in my experience to warrant mentioning this possible source of error. An antecedent successful closure of a perforated gastric ulcer, similarly does not gainsay that the lesion is not malignant. Twice within a year, in this clinic, when gastric resection was done for continuance of symptoms, it was found that the supposed benign ulcer was malignant.

The gastroscopist has a real contribution to make in the differential diagnosis of gastric lesions. Yet, many times, when all available diagnostic acumen has been applied, the diagnosis is not infrequently in doubt until histological sections are available for study.

Precursors of Gastric Malignancy

The identification of precursor groups of gastric malignancy, with careful scrutiny of such groups by periodic gastric analysis, roentgenologic and gastroscopic study will undoubtedly ultimately lead to earlier diagnosis and to earlier operation for gastric cancer. Some of those precursor groups are now apparent:

1. Patients harboring gastric polyps.
2. Patients with pernicious anemia.
3. Patients with an atrophic gastric mucosa.
4. The patient with a gastric ulcer, especially a persistent prepyloric defect.
5. Achlorhydric patients past sixty years of age.
6. Blood relatives of patients who have carcinoma of the stomach or pernicious anemia.

Whereas histamine achlorhydria is quite uniform in all patients with gastric polyps, only about 75 per cent of patients with gastric malignancy exhibit histamine achlorhydria. These latter patients usually have a gastric mucosa which is not atrophic beyond the reaches of the malignancy.

The Importance of a Short Afferent Loop in the Billroth II Operation for Ulcer

Surgeons in this country have been veering away, in recent years from the short or no loop retrocolic gastrojejunostomy accompanying gastric resection in favor of the long loop antecolic anastomosis. The disposition to do this resides apparently in two causes: (1) belief that an anterior long loop anastomosis will do away with stomal difficulties, especially postoperative obstruction at the efferent outlet; (2) belief that the anterior anastomosis may be performed with greater ease. With reference to the first consideration, I believe it may now be said with certitude that the numerous causes conjured up by surgeons of the past generation to explain obstruction at the efferent outlet are wholly fortuitous and irrelevant and have no bearing upon the matter. Amongst these are: the length of the afferent loop, its direction with reference to the gastric current and the site of the anastomosis to the stomach. *The only thing that matters* is the patency of the efferent outlet and this is dependent wholly on the amount of tissue inverted.[28] The average diameter of the jejunum at the ligament of Treitz is approximately 3.5 centimeters. If the surgeon utilizes only 0.5 centimeters of the bowel wall anteriorly and posteriorly in effecting the anastomosis, the residual lumen will be 2.5 centimeters. If, on the contrary, he employs 1.5 centimeters of the jejunal

diameter anteriorly and posteriorly in effecting the anastomosis, the residual diameter will be only 0.5 centimeters. If continuous, constricting sutures have been employed, mucosal swelling occurs additionally and no residual lumen remains and gastric retention and obstruction follow. Since we became alert in this clinic (1940) to the importance of inverting a minimum of tissue in effecting the anastomosis, no instances of gastric retention after gastric resection have been observed in a consecutive group of cases totalling more than 400 gastric resections for ulcer and cancer.

Proof of the importance of employing a short afferent loop even in extensive resections for ulcer rests on two grounds: (1) clinical; (2) experimental. As concerns the first, more than 300 consecutive resections have been performed for ulcer in this clinic (Operations Group III and IVA) without a single recurrent ulcer in this group. The three-quarter resection with excision of the pylorus and antrum (approximately 250 patients) or exenteration of the antral mucosa (more than fifty patients) with a short or no loop Hofmeister termino-lateral gastrojejunal anastomosis, utilizing the Billroth II plan of operation, has been employed in these patients. Kiefer (1942) reports from the Lahey Clinic a group of 173 resections for duodenal ulcer in which the incidence of gastrojejunal ulcer was 11.4 per cent (posited on recurrence verified at operation, roentgen demonstration of a crater or bleeding). In forty-nine resections for gastric ulcer, Kiefer failed to observe recurrent gastrojejunal ulcer. Lahey and his group[14] have been ardent advocates of the antecolic long afferent jejunal loop in effecting gastrojejunal anastomosis following gastric resection. The more direct experimental proof of the importance of the short afferent loop is posited on the following evidence: We were unable to produce ulcer employing the histamine-beeswax technique in four dogs upon which the three-quarter gastric resection had been performed employing a short afferent loop; when, however, a long afferent jejunal loop was employed in the anastomosis, perforation of a gastrojejunal ulcer occurred in both dogs in which the operation was done after daily implantation of histamine-in-beeswax.[16,17] Moreover, in four long-time survival experiments, spontaneous perforation of a gastrojejunal ulcer occurred after the three-quarter resection employing a long afferent jejunal loop in two dogs at approximately fifteen and eighteen months following the operation. The histamine-beeswax implantation was not employed in this latter group of dogs.[22,33]

The occurrence of gastrojejunal ulcer after the performance of the Schmilinsky procedure of effecting total intragastric regurgitation, with or without antral excision, is well known. In 1929 McCann reported that he had produced gastrojejunal ulcer in 80 per cent of twenty-six dogs operated upon according to the Schmilinsky plan. A number of investigators have repeated McCann's experiments with rather indifferent results. None of subsequent investigators, including Ivy and Fauley (1931), Weiss, Graves and Gurriaran (1932), Graves (1935) and Maier and Grossman (1937) were able to confirm McCann's observation of a high incidence of gastrojejunal ulcer following this procedure. In 1940, it was reported from this laboratory that eight dogs had been operated upon according to the Schmilinsky plan without the occurrence of a single gastrojejunal ulcer.[35] My associate, Dr. R. L. Varco, who made the anastomoses, employed a short duodenal loop approximately 8 centimeters in length. Since then Drs. K. A. Merendino and Sidney Litow repeated the experiment in four dogs, employing a long afferent jejunal loop. All four dogs died of spontaneous perforation of a gastrojejunal ulcer.[22,33]

These two bits of evidence (clinical and experimental) appear to afford convincing proof that employment of a short afferent loop is imperative even in extensive gastric resections to thwart effectively the ulcer diathesis. Wherein the nature of the protection afforded by the short afferent loop lies has, as yet, not been established. There are three possible explanations[31,33]: (1) the long afferent loop constitutes essentially a spatial Mann-Williamson operation; (2) the jejunal mucosa at some distance from the ligament of Treitz is less resistant to the acid-peptic digestive juice than are more proximal segments of the jejunum or duodenum; (3) the lesser secretin content of aboral jejunal segments as contrasted with the duodenum. Since the experiments of Bayliss and Starling (1902) it has been known that pancreatic secretion rich in alkaline buffers is dependent in large measure upon the delivery of the acid gastric juice into an intestinal segment where the mucosa contains abundant secretin. These three possible explanations are now in the process

of being submitted to experimental scrutiny.[22] Which of these factors or whether more than one factor operates to produce the difference in behavior with a long or short jejunal loop, described above, we hope experiment will elucidate.

The Billroth II Plan of Operation Abets the Ulcer Diathesis

It perhaps is not out of place to point out too that the Billroth II plan of operation abets the ulcer diathesis. Spontaneous ulcer in dogs is virtually unknown or, at any rate, is a great rarity. When, however, gastrojejunostomy is established in dogs, an incidence of gastrojejunal ulcer is observed in 6.6 per cent (Montgomery 1923). If, in addition, pyloric exclusion is performed, gastrojejunal ulcer occurs in dogs in approximately 50 per cent of instances (McMaster 1934; DeBakey 1937), indicating that the Billroth II plan of operation abets the ulcer diathesis. As a matter of fact, Eiselsberg, who devised the procedure of combining gastrojejunostomy with pyloric exclusion, did it on the basis of affording complete rest to a duodenal ulcer. Within a very few years thereafter, however, he observed that the high incidence of gastrojejunal ulcer following this procedure (37.5 per cent) warranted its discontinuance. Wherein does the explanation of the increased susceptibility to gastrojejunal ulcer lie following performance of gastrojejunostomy combined with pyloric exclusion? I am inclined to believe it resides in this, that the exclusion of acid gastric juice from the duodenum prevents normal operation of the hormonal secretin mechanism described by Bayliss and Starling. At any rate, it appears likely that the surgeon can do no better than to imitate nature in not allowing any great distance to intervene between the sites of entry of gastric juice and bile and pancreatic juice into the intestine.

How Short Can the Afferent Loop Be Made in The Billroth II Plan of Operation in Gastric Resection for Ulcer?

In this clinic a short retrocolic anastomosis has regularly been employed in gastric resection. Over a period of more than two years, the anastomosis in patients with ulcer has been made at the ligament of Treitz. Since the experimental observations relating to the importance of a short afferent loop were made, I have been at pains to determine, at operation, the length of the proximal duodenal segment. It has been a matter of some surprise to learn that anastomoses can be made at 12 to 20 centimeters from the divided and inverted proximal end of the duodenum. Inasmuch as anatomists describe the duodenum as being 25 to 30 centimeters in length, it is apparent that such anastomoses in effect are gastroduodenostomies in the mid-duodenum or the distal third of the duodenum quite regularly.

The question naturally arises: Would it be better to resect less of the stomach and return to the Billroth I plan of operation? The frequency with which perforated posterior wall duodenal ulcers are encountered at operation suggests that such a scheme would not be feasible in a large number of patients now treated satisfactorily in the manner described herein. The results of the present plan of treatment have been so uniformly successful as to suggest its continuance until a more conservative plan of treatment, equally satisfactory, is available.

Results of Resection for Ulcer

Anyone who has had the opportunity of observing a large group of ulcer patients, many of whom suffered threatened or actual emotional or economic ruin because of years of enforced unsuccessful medical management, cannot help but be enthusiastic over surgery for such patients when he realizes:

1. That the operation may be done at little risk—even less risk than the ordinary ulcer patient runs from perforation alone. The risk of operation in this clinic for ulcer, including complications from all causes such as perforation, massive hemorrhage, gastrojejunal ulcer, and gastrojejuno-colic fistula has been 5 per cent. The mortality in resections of election has varied between 2 and 3 per cent.
2. That the operation frees the patient from the necessity of dieting.
3. That the operation doesn't compromise the future for the patient in any serious manner.
4. That the operation curbs the ulcer diathesis permanently.

It is true that a three-quarter resection does diminish the gastric capacity for several weeks or months. In fact, a few patients find they

cannot ingest, without some measure of discomfort, a full holiday dinner even after the elapse of a few years. Yet no real handicap is suffered on this score save by a few patients. In the main, the sturdy, hypersthenic patient rarely complains of any disability on this score. Frequently by the time such a patient leaves the hospital (usually the seventh or eighth day after operation), he finds that his gastric capacity is already quite normal. When seen in the Outpatient Clinic a few weeks after leaving hospital, he may insist that he can eat as large a meal as he ever did. It is the thin, lanky person of hyposthenic build, whose stomach at operation is found to be longer and larger than the hypersthenic patient, who suffers most from reduction in gastric capacity after operation, and who may find that it takes some time before he can ingest his food rapidly or drink fluids with his meals. As a matter of fact it is not actually the reduced gastric capacity that bothers these patients. On the contrary, it is the rapidity of gastric emptying. When the duodenal or jejunal loop becomes adjusted to the quick emptying mechanism of the residual gastric pouch, this disability becomes less noticeable. In some patients, however, rapid eating and the ensuant quick emptying of the stomach (the pylorus being gone) may produce transient nausea and provoke sweating.

The operation of three-quarter resection for ulcer has been done in approximately a dozen patients who, at some time or another previously, had been under psychiatric treatment for emotional instability. The convalescent period in these patients is more trying than in the ordinary run of patients. Yet, when the status of these patients is revaluated with the passage of years, it is surprising to note how ridding the patient of the ulcer diathesis has improved his emotional instability. A recent survey of our experience on this score has been quite reassuring.

No patients with severe anemia have been observed in this large group of patients who have been submitted to three-quarter resection for ulcer. Nor should one expect to find intractable anemias,[8] inasmuch as the intrinsic factor resides largely in the fundus of the stomach of man (Castle). The most reassuring circumstance, however, is that not a single recurrent gastrojejunal ulcer has occurred amongst the patients who have had the Group III or the IVA operations.

No Necessity for Dietary Strictures

Inasmuch as the operation described herein reduces effectually the capacity of the stomach to secrete acid, no necessity exists for imposing dietary strictures on patients having undergone resection. Only those patients who have difficulty sustaining an optimal weight for their height are asked to take an extra amount of fat, such as butter, cream, cheese, bacon and pastry, to insure a good caloric intake. Inasmuch as alcohol is a profound stimulus of gastric secretion, caution is urged on this score. Patients are not denied the privilege of taking a glass of beer or wine, or even of drinking a cocktail. Nevertheless, because of the known capacity of alcohol to provoke a generous flow of gastric juice, patients are urged to eat directly on imbibing an alcoholic beverage.

Summary

Ulcer is essentially the end effect of the digestive action of the acidpeptic gastric juice upon the gastric or duodenal wall. It may occur in anyone who has a stomach which secretes an abundant amount of free hydrochloric acid. Ulcer occurs spontaneously in man. The spontaneous occurrence of ulcer in laboratory or domestic animals is distinctly unusual. Yet, by stimulating the endogenous mechanism for the secretion of acid, ulcer may be produced almost at will in most of such animals. Under the influence of daily implantation of histamine-in-beeswax a torrent of acid secretion occurs which breaks down the capacity of the tissues coming in contact with the acid to defend themselves. In consequence of this failure of neutralization of the acid, ulcer comes about. Erosion, a frequent occurrence in the stomachs of normal individuals, is undoubtedly a common precursor of ulcer. The probabilities are that the margin of difference between a person who has an ulcer and one who has not, is not great.

Frequent feeding constitutes the essence of satisfactory conservative management of ulcer. The long night hours of fast constitute essentially the most important defect in medical management. The surgical management of ulcer concerns itself primarily with medical failures and the complications of ulcer.

A satisfactory operative treatment for ulcer has been devolved which, in the light of the experience of this clinic, suggests that it may be done

as a one-stage operation upon patients presenting the proper indication for operation without fear of prejudicing the future for the patient and with real assurance of thwarting the ulcer diathesis permanently. The criteria of such an operation may be defined.

It is to be hoped that, as our knowledge of the inter-relation of the digestive processes becomes better known, a satisfactory conservative treatment may be worked out on the thesis of trying to get the digestive glands in question to work in co-operative harmony.

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A CONSIDERATION OF CERTAIN UNSOLVED PROBLEMS IN CARDIOLOGY

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OUTSTANDING achievements have occurred in the field of cardiology with the result that today as never before the physician is better equipped to render a correct diagnosis, to approach reasonable accuracy in prognosis and to offer the patient the greatest benefit of therapy within the existing limits of knowledge and experience. These plaudits, however, must not be accepted with any degree of complacency, for the cardiologist is keenly aware of the many unsolved problems that daily confront him. There are certain of these unsolved problems that I wish to discuss.

From the Section on Cardiology, the Mayo Clinic, Rochester, Minnesota. Read at the dedication of the Institute of Cardiology, Mexico City, April 18, 1944.

Coronary Disease

Of paramount importance is the appalling increase in the incidence of coronary artery disease and its ever-increasing appearance among younger

persons. This increased incidence among younger persons especially constitutes a serious threat to future generations unless the cause or causes of the disease become known and adequate measures can be instituted to prevent its progression. The problem briefly resolves itself into a need for determining the causes of atherosclerosis and arteriosclerosis. For many years the medical profession has been content to accept these arterial changes as a customary phenomenon in the process of aging. Many arguments to the contrary are at once apparent and the acceptance of this concept completely excludes constructive thought and effort in solving this important problem. Many concepts have been expressed but as yet the true answer to the question remains concealed.

Some of the hypotheses prevalent today concerning the causes of arteriosclerosis and atherosclerosis may be briefly summarized in the following manner:

1. The factor or factors of heredity tend in certain instances to create persons who are more susceptible to the development of arterial damage than other persons are. They are susceptible earlier in life and the damage tends to follow a marked and progressive course. These individuals may be considered candidates for localized or widespread arterial disease eventuating in coronary artery disease, predominant involvement of other arteries, hypertension or various combinations of these conditions.

2. The stresses and strains of modern life have been accorded much importance and may play an important role provided that cardiovascular candidates do exist.

3. High protein diets for many years were believed to contribute to the production of arterial damage. This concept received some acceptance following the production of arteriosclerosis in herbivorous animals by means of a prolonged and unaccustomed diet high in proteins.

4. Infections capable of producing arteritis have received some attention as etiologic factors of atherosclerosis and arteriosclerosis. Among them are typhoid fever, bona fide influenza, rheumatic fever and syphilis.

5. The more universal and excessive use of tobacco has been linked with the increasing incidence of arterial disease.

6. More recently, the concept that the arterial changes under discussion result from a disturbance in lipoid metabolism has received considerable attention. This hypothesis concerns itself with the occurrence of hyperlipemia from faulty lipoid metabolism and as the body ages (normally or prematurely) the power to remove the excessive quantities of lipoids from the arteries is lost. These substances act as irritants and eventuate in atherosclerosis and arteriosclerosis. However, absolute proof of the correctness of this concept is still not at hand. Some evidence indicates that the lipoids are in some manner concerned in this process but their actual role or sequence in the pathogenesis of arterial disease is still problematic.

In the analysis of these various concepts it becomes evident that no single concept adequately fits all circumstances. Although certain ones appear to have some significance in certain cases, a common denominator pertinent to all cases is still lacking. Interesting as these speculations may be the etiology of atherosclerosis and arteriosclerosis, and therefore of coronary artery disease, still is unknown.

Subacute Bacterial Endocarditis

Another important disease of great interest to the cardiologist is subacute bacterial endocarditis. Here again, numerous unsolved problems exist, particularly those with regard to the pathogenesis of the disease. Physicians are generally in agreement on two fundamental issues regarding the development of the disease, namely, (1) the existence of a pre-existing valvular injury or congenital defect and (2) the presence of a transient bacteriemia (usually due to the streptococci of the viridans group). These two factors, however, inadequately answer the question because they concern themselves only with the minority of those cases, that is, the cases in which subacute bacterial endocarditis develops, and fail to explain the majority of cases in which, under apparently identical circumstances, the disease does not develop. The question which must be answered, therefore, is what factors prevail in cases in which healed valvular defects are present and phases of transient bacteriemia appear (a not uncommon occurrence during the lifetime of many persons) but in which subacute bacterial endocarditis does not develop.

In the majority of cases of subacute bacterial endocarditis the infecting micro-organisms are of relatively low virulence although exceptions to

this statement are recognized. Furthermore, considerable evidence indicates that a state of hyperimmunity exists which is believed to be conferred to a large degree by the reticulo-endothelial system. Local and systemic tissue resistance, a state of hyperimmunity and, generally, invading organisms of low virulence are believed to produce the subacute or chronic course of the disease.

These considerations, however, do not help to solve the fundamental problems. I repeat the main question: what factor or factors determine the development of the disease in one patient and prevent its development in another who clinically has an analogous condition? For example, both have valvular or congenital cardiac defects and both have been subjected to transient phases of bacteriemia. The one, however, eventually has subacute bacterial endocarditis and the other does not.

Evidence indicates that the state of hyperimmunity, local tissue resistance and the low virulence of the micro-organisms permit focalization of micro-organisms. If this combination of circumstances causes such focalization of bacteria on the endocardium, why does it occur in some cases and not in others? Platelet thrombi on the endocardium are considered by many observers as being prerequisite to and acting as foci for the lodgment for micro-organisms. But here several questions arise:

1. Do the platelet thrombi develop before the bacteriemia or are they the result of it?
2. Is their development based on unique mechanical or immunologic factors or both?
3. What is the role of the mononuclear endothelial cell proliferation which so commonly occurs in endocarditis?
4. Are endocardial defects, at times occurring with this proliferation, a requisite for the development of platelet thrombi?
5. Do the micro-organisms always find lodgment by direct contact with the mural endocardium or does embolic valvulitis play a role in certain cases?
6. Many authors comment on the increased local resistance of injured valves. Is this statement a mere presumption? If it is not, what factors are operative to produce increased local resistance in congenital cardiac defects, even those as trivial as bicuspid aortic valves?

From the various questions mentioned and many others of more remote application not mentioned, it is clear that numerous uncertainties exist regarding the pathogenesis of subacute bacterial endocarditis. These problems are of great importance owing to the fact that the present treatment of subacute bacterial endocarditis is extremely discouraging notwithstanding undue optimism in certain quarters. An analysis of more than 3,000 cases reported in the literature at various times in recent years revealed cures in only two per cent. These cures include spontaneous recoveries. These data do not include cases of patent ductus arteriosus with superimposed subacute bacterial endarteritis in which cure is effected by surgical ligation.

It is thus apparent that a more exact knowledge of the pathogenesis of the disease is necessary, because the probability exists that its prevention rather than its cure may be a necessary accomplishment.

Chronic Constrictive Pericarditis

Certain unanswered questions prevail in chronic constrictive pericarditis, and of special interest are the cases in which calcification of the pericardium is associated. Although much has been learned concerning the clinical recognition of constrictive pericarditis and its crippling effect on the heart in the production of an inflow insufficiency, the etiology of the form of the disease associated with calcification of the pericardium is still uncertain. In certain cases of chronic constrictive pericarditis a rheumatic etiology has been postulated, but lack of incriminating evidence in the great majority of cases invalidates this presumption. Although rheumatic fever commonly produces pericarditis and may involve the pericardium so extensively that the sac is completely obliterated, constriction rarely occurs and the deposition of calcium in the pericardial tissues is still more uncommon. Another bit of evidence which points away from rheumatic disease as an etiologic factor is that valvular lesions are extremely rare in classical cases of chronic constrictive pericarditis.

Tuberculosis at times has been proved to be the etiologic infection in chronic (or subacute) constrictive pericarditis with or without calcification. This type of infection, however, explains only a small percentage of cases. In tuberculous constrictive pericarditis the course of the disease is usually of relatively short duration (four to six months) or the disease may represent an exacer-

bation of a previous pericarditis and signs of active infection are usually present.

Occasionally a history of previous intrathoracic infection is elicited, notably of recurrent episodes of pneumonia and yet in the majority of cases clues to the exact nature of the initial pericardial injury cannot be found. The classical form of chronic constrictive pericarditis with calcification occurs with much greater frequency among males than among females; it may occur in childhood or adult life. The signs of constriction may be of only a few months' duration but more commonly they have been present for several years before the true nature of the disease is recognized. Although calcification is not a universal concomitant of chronic constrictive pericarditis, its incidence is remarkably high. Generally speaking, the deposition of calcium in the healing of an inflammatory process requires considerable time, yet in some cases of chronic constrictive pericarditis a remarkably short time has elapsed from a state of apparent normal health to the onset of symptoms and signs of constriction and the demonstration of calcium in the pericardium.

Several interesting questions immediately present themselves regarding the etiology of this unique disease.

1. Is the primary infection of the pericardium so insidious that symptoms and signs of its presence are not apparent?
2. What factor or factors influence or determine the great variations in the course of the disease?
3. While rheumatic fever and tuberculosis both have been linked with constrictive pericarditis, what infection accounts for the majority of cases?
4. Does the predominance of the disease among males have any etiologic significance? These points of conjecture warrant renewed and vigorous interest and investigation in this extremely interesting and crippling disease.

Paroxysmal Tachycardia

The rather commonplace disturbance known as paroxysmal tachycardia still presents numerous unsolved problems. In this discussion I refer particularly to the supraventricular forms of the disorders, namely paroxysmal auricular and nodal tachycardia. Although these paroxysmal accelerations may occur when various forms of heart disease exist, they occur more frequently when the heart is not diseased. The cause of the accelerated heart action is stated glibly as a rapid succession of abnormal stimuli usually resident in an ectopic focus beyond the sino-atrial node. This explains, in a limited sense, the mechanism of the disorder but sheds no light on its actual cause. Clinicians have been inclined to explain the condition on the likewise vague basis of a focus of increased cardiac irritability. The literature contains numerous but rather meaningless explanations which even include a presumptive allergic origin of the condition.

For many years considerable speculation has centered about the role of the cardiac nerves, namely, the cardiac vagus and the parasympathetic nerves, but only theoretical considerations are as yet available. In recent years it has been shown that the subcutaneous administration of acetyl-β-methylcholine is capable in certain instances of causing the sudden cessation of the paroxysm of tachycardia. Its effect appears to be similar to that occurring from stimulation of the vagus and parasympathetic nerves. These observations have brought forth the query regarding the possibility of a periodic lowering of the normal choline content of the blood and tissues occasioned, perhaps, by a rise in its antagonistic component, cholinesterase. While these speculations are of considerable interest, they still remain speculations.

Even in ventricular tachycardia in which cardiac disease is the rule or in which abnormal drug reactions have occurred, the exact cause of the abnormal tachycardia remains obscure. I am certain that paroxysmal tachycardia constitutes another unsolved problem with which critical investigation of future years must concern itself.

Comment

I am confident that my fellow cardiologists have pondered these same problems and have experienced the same feelings of frustration when critical explanations for these and other questions have been demanded.

AN ANALYSIS OF THE OBSTETRIC DEATHS DUE TO HEMORRHAGE

Minnesota Maternal Mortality Committee

During the twelve-month period from July 1, 1941 to June 30, 1942, the Minnesota Maternal Mortality Committee has recorded and analyzed 112 Maternal deaths. Of these, hemorrhage was found to be the cause of death, or an important contributory cause, in 21 cases or 18.75 per cent. In other words, nearly one of every five women in this obstetric mortality group died as a result of hemorrhage. The aims of this analysis are twofold: (1) to study the underlying factors responsible for the hemorrhage, and (2) to offer suggestions for the management of conditions associated with bleeding during pregnancy, labor and the puerperium.

The deaths due to hemorrhage are almost equally divided into two groups. The first group of ten patients with antepartum hemorrhage had an average age of thirty-three years, and an average of five previous pregnancies per patient, but only 1.5 living children. The second group of eleven patients with postpartum hemorrhage averaged 29.7 years in age. They had an average of 1.8 pregnancies per patient with 1.6 living children.

In the entire series only four were primiparas. Of the seventeen multiparas, five had had two pregnancies; four had had three; two had had four each; while six had had more than five pregnancies, with one woman having had fourteen.

Postpartum hemorrhage was the cause of death in ten patients, placenta previa with hemorrhage in five, premature separation of the placenta with hemorrhage in four, rupture of the uterus in one and inversion of the uterus in one.

A critical analysis of the case reports was made by the Maternal Mortality Committee in an attempt to determine whether or not the errors and deficiencies in (1) prenatal care (2) management of the labor and delivery or (3) postpartum care were contributing factors in the maternal mortality in each case.

Prenatal Care.—An analysis of the prenatal care received by these twenty-one patients reveals that seven received no prenatal care. In three of these, the responsibility was charged to the patient. Inasmuch as the patient presented herself for prenatal care, but none was given, the physician was charged with the responsibility for lack of prenatal care in four instances. Nine patients received prenatal care which was faulty but noncontributory, whereas in five patients it was considered faulty and definitely contributory to the cause of death. Thus the prenatal care was adjudged incomplete or inadequate in 100 per cent.

Although the State Board of Health has for many years made blood Wassermann examinations free of charge, only six of the twenty-one physicians availed themselves of this service. In the majority of cases the medical history was incomplete, or entirely lacking, and in many instances the blood pressure was not taken during the entire pregnancy. Outstanding also was the lack of any attempt to determine the adequacy of the pelvis. Even the most elementary and available forms of pelvic mensuration were rarely utilized, regardless of whether or not the history revealed a dystocia in a previous pregnancy. Likewise, the majority of the patients did not have a general examination or a pelvic examination during the prenatal period. In the few instances where abnormal findings were discovered during the prenatal period very little or no effort was made to study the patient to determine the cause.

Labor and Delivery.—The management of the labor and delivery was considered faulty but noncontributory in five patients, faulty and definitely contributory in fifteen, while one patient died of a severe antepartum hemorrhage due to placenta previa. She was not in labor and died undelivered. Another patient died, undelivered, of hemorrhage and shock, due to premature separation of the normally implanted placenta, associated with a toxemia (most likely arteriolosclerotic) at thirty-eight weeks gestation. She was Rh negative and succumbed after the third large blood transfusion, the donors of which are not known.

In fifteen patients the Committee considered that the manner of conduct of the labor and delivery was not in accordance with accepted obstetric standards and contributed in a definite degree to the fatal outcome.

Postpartum Care.—Five patients died before or in the immediate postpartum period. Faulty postpartum care contributed to the death of sixteen. The delay in recognition and treatment of acute blood loss is the striking inadequacy in the analysis of these sixteen case records. Too often intravenous saline and glucose were used instead of plasma and whole blood transfusions. Failure to control or check hemorrhage was outstanding. In many instances no effort was made to ascertain the source of the bleeding by inspection of the birth canal.

The following are a few of the criticisms in the management of these patients:

1. No therapy for hemorrhage and shock.
2. Failure to examine the cervix after operative delivery and in the presence of uncontrolled hemorrhage.
3. Failure to manually remove the placenta and to pack the uterine cavity where bleeding is continuous and persistent.
4. Delay in obtaining consultation.
5. Use of pituitrin and intravenous saline in a toxemic patient.
6. Inadequate treatment of shock.
7. Failure to have an available blood donor in the face of past obstetric history.
8. Inadequate patient study.
9. Inadequate aseptic technique.

Only one autopsy was performed. Postmortem examination was requested by the physician in seven cases but was denied by the relatives. The attending physician made no attempt to secure an autopsy in thirteen of the maternal deaths due to hemorrhage. The lack of postmortem examinations is reflected very definitely in errors and inaccuracies found on the filed birth and death certificates. Only eight of the twenty-one were filled out correctly and completely; four were incomplete, and nine were erroneous. Two of the birth certificates required by law were not filed.

Postpartum Hemorrhage

Ten deaths were due to postpartum hemorrhage. In nine of these the hemorrhage was the primary cause of death, while in one it was considered to be an important contributory cause. Labor was induced in three of the patients and started spontaneously in the other seven.

One patient was delivered by cesarean section following a sixty-one hour labor, one by podalic version after two unsuccessful attempts at forceps delivery, while the remaining eight delivered spontaneously. Only three attempts were made to control the hemorrhage by uterine tamponade. Five of the patients were delivered in the hospital and five were delivered at home.

The cause of the postpartum hemorrhage was believed to be due to uterine atony in five patients, lacerated cervix in two, retained placenta in two, and an attempted removal of a placenta accreta in one.

As an example of a preventable death, the following case report may be cited:

A patient who had had a medical induction was delivered by podalic version after two attempts at forceps delivery of a fetal head in the right occipitoposterior position were unsuccessful. Although meager attempts were made to replace blood loss the patient died of shock and hemorrhage one hour and fifteen minutes later. Autopsy revealed extensive lacerations of the cervix, vagina, and external genitalia, a third degree laceration of the perineum and hemorrhage into the retroperitoneal tissues of the pelvis. The record states that a vaginal examination made a few minutes prior to delivery revealed a "questionable anterior lip of cervix." This, coupled with the extensive lacerations of the cervix found at autopsy, would lead one to believe that the cervix was not completely dilated at the time of delivery, and that the patient had not yet entered the second stage of labor. The indications for the radical procedures used in the delivery of this patient are obscure. Apparently the need for replacing the blood loss was not recognized, nor was any attempt made to prevent further blood loss by repair of the lacerations. The fluids administered by vein during the one and one-quarter hours before death consisted of 200 c.c., 10 per cent glucose, and 200 c.c. of citrated blood. The criticism of the management of this case as related to the cause of death is as follows:

1. Incompetent management of the actual delivery.
2. Inadequate treatment for hemorrhage and shock.
3. Failure to check hemorrhage by repair of lacerations.

Another preventable death was that of a thirty-year old multipara who was given three medical inductions of labor because of hydramnios. The last induction was supplemented by intramuscular pituitrin. The patient precipitated in bed without preparation for delivery. The placenta was delivered but postpartum hemorrhage ensued. In spite of the administration of oxytocics, the hemorrhage continued, but no treatment was instituted until two hours after delivery when the patient was found to be pulseless and in shock. No blood pressure determinations were made. Although 750 c.c. of 5 per cent glucose in saline, 250 c.c. of plasma and a group IV transfusion (not cross-matched) were then administered, the patient failed to rally. The uterus was said to have been packed without moving the patient from her bed. She expired four and three-quarters hours after delivery. Permission for postmortem examination was not requested. The management of this case may be criticised on the basis of inadequate precautions to prevent further hemorrhage, no therapy for continued vaginal bleeding, failure to determine source of hemorrhage, delay in transfusion, inadequate therapy for hemorrhage, delay in uterine tamponade, and lack of blood pressure determinations.

In the analysis of these ten deaths due to postpartum hemorrhage, eight were classified as definitely preventable, one as probably preventable, and one as possibly preventable. The death classified as probably preventable occurred in a 37-year old multipara who had a precipitate and unattended delivery with a postpartum hemorrhage due to uterine atony and/or cervical laceration. Although there was ample opportunity, there was delay in inspection of the birth canal to determine the source of bleeding. "Vaginal" tamponade was used with the result that hemorrhage continued, but its recognition and treatment were too late.

The possibly preventable death occurred in a multipara who had a postpartum hemorrhage following a spontaneous abortion at twenty-six weeks. Delay in the recognition and treatment of the acute blood loss resulted in a marked secondary anemia, and the patient succumbed to a streptococcic pneumonia seven days after delivery.

Placenta Previa

Five deaths were due to hemorrhage associated with placenta previa. In four of these, hemorrhage was the primary cause of death, and in one it was considered to be an important contributory cause.

One patient died undelivered under circumstances which indicate either gross negligence or complete incompetence in the handling of vaginal bleeding. She was a multipara, who was first seen because of a profuse and painless vaginal bleeding. Without any examination whatsoever, and without aseptic precautions, the vagina was packed with gauze. She was admitted to the hospital three hours after the vagina had been packed. The patient was bleeding profusely through the pack but therapy consisted merely of elevation of the foot of the bed and application of hot water bottles and blankets. The pulse rate was recorded as 140

but the blood pressure was not taken. Three hours after admission the patient was given morphine and atropine because of restlessness; strychnine, caffeine and finally intravenous saline was started when she became pulseless just before death, four and one-half hours after admission, and seven and one-half hours after the vagina was packed. No examination of any kind was ever done, no laboratory tests nor blood pressure recordings taken, no blood obtained for transfusion, and the pack was left in the vagina. Permission for autopsy was not requested.

The remaining four patients who died of hemorrhage from placenta previa were treated by manual dilation of the cervix and version with immediate extraction. Two had medical induction of labor, one of these in the face of severe antepartum bleeding. All four patients delivered in the hospital but in only one was any attempt made to replace blood loss or to treat shock by increasing the blood volume. In two, the placenta delivered spontaneously, and in two it was removed manually. In only one patient was uterine tamponade used for control of postpartum hemorrhage.

The death in which bleeding was a contributory factor was that of a thirty-seven-year-old patient with a history of one previous pregnancy which terminated in spontaneous delivery of term twins. Slight vaginal bleeding was first noted during the three weeks before delivery with a severe hemorrhage just before hospitalization. She was seen by her physician five hours after hospitalization and at this time appeared to be in good conditions, but specific information is lacking since the examination was incomplete and the records grossly inadequate. There was, however, moderate edema of the lower extremities and a 1 plus albuminuria, but the blood pressure was not taken. A sterile vaginal examination was done and two doses of 5 grains of quinine were administered to stimulate the weak uterine contractions. Eight and one-half hours before delivery, a second sterile vaginal examination was done but nothing is known of the findings of these two examinations. It can be assumed that the placenta previa was not diagnosed. After almost twenty-four hours of labor the physician was called to the hospital because of profuse vaginal bleeding. The patient was immediately prepared for delivery and anesthetized. Vaginal examination revealed only 4 cm. cervical dilatation with the placenta covering the whole cervical os. Without further delay, the cervix was manually dilated and lacerated, the placenta perforated, and the fetus (stillborn, 3500 grams.) delivered by version and extraction. The mother was said to be in mild shock with marked pallor after profuse bleeding during delivery and manual removal of the placenta. The blood loss was not estimated. Glucose (1000 c.c. of 5 per cent in saline) was given and vaginal bleeding continued for an unknown period of time, and finally stopped without further treatment. No blood pressure readings were taken.

Some forty hours after delivery the patient developed chills and fever. Inadequate doses of sulfanilamide were given and later a shift to sulfathiazole was made. Chills and fever to 104° continued. About the fifth postpartum day the patient received 500 c.c. of plasma. No blood replacement was attempted, and no laboratory work was done. One week after delivery a specialist was called in consultation and found a deep laceration of the cervix extending up into one broad ligament, postpartum parametritis, moderate ileus, and bronchopneumonia. He recommended continuation of supportive therapy, including chemotherapy as well as small blood transfusions. On successive days, the patient received 400 c.c. of citrated blood, but the septic course continued, cyanosis appeared, the respiratory rate increased, and the patient succumbed ten days after delivery. There was no autopsy.

Comment.—Obviously there is a definite need for an understanding of the terrific dangers involved in the treatment of placenta previa by accouchement forcé. As Eastman points out, the cervix and lower uterine segment in placenta previa have the consistency of wet blotting paper, consequently radical manipulations, such as manual dilatation of the cervix, usually produce extensive lacerations which further increase the blood loss. David Findley shows in an analysis of 47,828 cases of placenta previa, that the important factor in the decrease in maternal deaths was due to the increased use of cesarean section. Mackensie also has reported a decrease in maternal death rates in all types of placenta previa treated by cesarean section as against delivery from below.

No set of rules can be used in the treatment of all cases of placenta previa. The treatment must be determined by the findings and circumstances in each individual patient. Eastman lists a group of general principles of present-day therapy in placenta previa which are worth enumerating:

1. The liberal use of blood transfusion is prerequisite to the successful outcome of any form of treatment.

2. Rectal examinations are inconclusive and dangerous; sterile vaginal examinations should be done only after the operating room is set up for the immediate institution of any form of treatment that may be indicated, including cesarean section.

3. Provided the patient is not infected, all cases of central placenta previa and all cases of partial placenta previa in primigravidae are best treated by cesarean section.

4. Most cases of marginal placenta are best handled by rupture of the membranes, or, possibly, rupture of the membranes and Willett forceps.

5. In cases which fall between the two extremes mentioned in "3" and "4," the present trend is toward cesarean section.

6. Concerning the relative value of classical and low-cervical cesarean section, opinion is divided; if the placenta lies anteriorly, almost all authorities favor the classical operation.

Dippel and Brown have employed soft-tissue roentgenography to visualize the placenta. Since the placenta is usually located either on the anterior or pos-

terior wall of the uterus, a lateral roentgenogram may be used to determine whether or not the placenta is attached in the region of the cervix. The value of this procedure is mainly to rule out the presence of placenta previa, and thus reduce the number of vaginal and cervical examinations required to make a diagnosis.

Premature Separation of the Placenta

Four deaths were caused by hemorrhage from premature separation of the normally implanted placenta. In three the hemorrhage was the primary cause of death, and in one it was an important contributory cause. Two patients had medical induction of labor. One patient died undelivered, the remaining three had operative deliveries; two by forceps, and one by cesarean section. All four patients showed evidence of a mild to a moderately severe toxemia of pregnancy by the finding of hypertension and/or albuminuria. In one, the toxemia was undiagnosed, and in the remaining three, there was no treatment directed toward its control. Intramuscular pituitrin and intravenous saline were used in all four patients.

The following case report is an example of a preventable death in this group:

A twenty-eight-year-old primigravida with a blood pressure elevation of 150/100 and a 2 plus albuminuria at term was subjected to two medical (castor oil, quinine, pituitrin) and one surgical (hydrostatic bag and pituitrin) inductions of labor. After twelve hours of apparently satisfactory progress, the patient complained of marked tiredness. A few hours later she was found to be in shock with stary eyes, excessive sweating, and weak, rapid pulse. A diagnosis of ablatio placentae was made and the patient taken immediately to the delivery room, prepared and delivered by mid forceps of a stillborn fetus. The pulse was barely perceptible, but no further blood pressure determinations were made. Many clots and some fresh bleeding followed the delivery of the placenta. Oxytocic drugs and stimulants were administered, but the patient expired within thirty minutes after delivery. The vaginal canal and uterus were not examined and autopsy was not requested.

The cause of death was shock and hemorrhage due to premature separation of the normally implanted placenta with pre-eclamptic toxemia. The handling of the labor and delivery are criticised as being grossly faulty and contributory for the following reasons:

1. Incomplete toxemia record, too few blood pressure determinations.
2. Repeated doses of pituitrin to a toxemia patient.
3. No sedation for a toxemia patient.
4. Major operative delivery with patient in shock.
5. No attempt made to replace blood loss.
6. Inadequate treatment of shock.

In this condition the early replacement of blood loss is particularly important to obviate the development of shock. The trend is toward conservative management, using tight abdominal binders, rupture of membranes and blood transfusion.

Hemorrhage and Shock

The most significant error in the treatment of obstetric hemorrhage as revealed in this study, is the lack of early recognition and adequate treatment of surgical and hemorrhagic shock. The two important factors in the treatment of hemorrhagic shock are the control of the bleeding and the replacement of blood loss. Where possible, immediate steps should be taken to stop further bleeding without adding to the shock already present. In the face of persistent postpartum bleeding, there should be no hesitation in inspecting the vagina and cervix, and repairing lacerations which are bleeding. Bleeding from the uterine wall may be treated by uterine tamponade, with or without packing the vagina. Packing the vagina alone will not control uterine bleeding. Aseptic technique should be closely adhered to. Undoubtedly many uterine packs are left in too long. When the uterus has recovered its tone and the patient has recovered from shock, the pack may be removed, usually in six to eight hours. The danger of infection increases proportionately with the length of time the pack remains in the uterus. Restoration of blood volume is the most important therapeutic measure in the prevention and treatment of shock. The best available method of permanently increasing a diminished blood volume is by means of the intravenous administration of adequate amounts of whole blood or blood plasma.

In conditions such as inversion of the uterus, shock develops very quickly and is out of all proportion to the amount of blood loss. The shock should be treated immediately and adequately by administration of blood plasma and/or whole blood until the pulse and blood pressure have returned to normal levels. The use of operative procedures to reduce the inversion in the presence of shock usually results in failure and merely increases the degree of shock. It is of paramount importance that proper measures be instituted for the early and prompt treatment of shock if maternal deaths due to complications of this sort are to be prevented.

Blood banks have been established in larger communities and this has eliminated much of the difficulty in obtaining suitable blood for use in emergencies. The use of plasma is replacing whole blood transfusions in the emergency therapy for hemorrhage and shock and it is now possible for every physician to have his own plasma bank. In addition to the greater ease with which plasma can be stored and administered, it has advantages over whole blood in the treatment of shock. Its chief virtue lies in the fact that its protein content restores blood plasma volume physiologically while at the same time it can be given immediately, no typing or crossmatching being necessary. Gum acacia solution may also be used in the emergency treatment of shock. Since restoration of the diminished blood volume to normal is the aim to be achieved by the intravenous use of blood or plasma, these substances must be given in sufficient quantities to accom-

plish this purpose. The amount needed to treat shock cannot be stated in cubic centimeters. Sufficient whole blood, plasma or gum acacia solution must be administered to bring the blood pressure to normal levels. Plasma may be used without laboratory typing and is free from danger of reaction accompanying the use of whole blood. Neither is it necessary to heat the plasma before administration, and it can be given rapidly. It should be filtered while being administered. Every large and small hospital and every obstetrician and every physician who is practicing home obstetrics should have at least a small plasma bank, so that plasma is immediately available for emergency use.

The development of a marked secondary anemia due to hemorrhage is best treated by whole blood transfusions to restore the hemoglobin and red blood cell levels. This restoration of the hemoglobin and red blood cell content in instances where there has been excessive or continuous blood loss, will prevent the development of many complications during the puerperium.

It has been the aim of the Committee to present a factual record of what happened to twenty-one patients who died of obstetric hemorrhage within a one-year period. The Committee feels that this experience justifies some definite recommendations aimed at reducing the maternal death rate due to bleeding.

Recommendations

1. More complete and careful patient study. The minimum standards of prenatal care include regular visits to the physician, a history, physical and pelvic examination, blood Wassermann test, pelvic mensuration, weight and hemoglobin determination and blood pressure recording. Cases suspected of toxemia or blood dyscrasia require further investigation. When uterine bleeding is present, the patient's blood should be typed early, and where possible, a determination of the Rh status made.

2. Investigation and recognition of the cause of antepartum bleeding with immediate hospitalization where plasma and whole blood are available for emergency use.

3. Recognition of shock and adequate treatment. Shock is a potential danger in many obstetric problems, particularly in the presence of complications such as uterine bleeding. It should be anticipated in all cases requiring major obstetric surgery. Frequent blood pressure determinations before, during and after labor will forewarn one of impending shock.

4. Greater use of soft tissue roentgenography in patients with antepartum bleeding.

5. In the presence of antepartum bleeding, the patient should be cared for in such a manner that the performance of a cesarean section does not become contraindicated. This applies particularly to the avoidance of infection of the genital tract.

6. Consideration of cesarean section in place of more radical and dangerous procedures such as accouchement forcé, in cases of central placenta previa and marginal placenta previa in primigravidae.

7. Manual dilatation of the cervix has no place in the present-day practice of obstetrics and is unqualifiedly condemned in the presence of placenta previa.

8. Blood and/or plasma banks should be part of the armamentarium of every physician practicing obstetrics.

9. Consultation. A capable consultant should be called early.

10. Greater care should be exercised in completing vital statistics records.

11. A greater number of autopsies will establish the true causes of death.

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THE TRAGEDY OF THE UNDER PAR

Health cannot be measured completely in terms of low death rates, in freedom from the symptoms of disease, or lack of pathological evidence. That is only the negative side of the picture. True health is positive. It is the abundance of physical and spiritual vitality which enables a person to get the most out of living. Health is not an end in itself, it is only a means to an end.

Many a mother is dragging through life with a tired, under-par, unwilling body. Her contribution to her home, to the care of her children is at low ebb. She is able to do the necessary things but life may be a burden. The tragedy is that so many of these miseries and ailments are preventable and curable. It is only when a physical or mental breakdown occurs—an emergency, a sudden operation—that the usual health facilities of the community are marshalled to protect these women. Notwithstanding much big talk about the importance of preventive care—the bulk of community health service is really emergency sickness service. If we accept the concept of positive health—the best possible health for everyone—then communities must recognize more fully the importance of preventing, discovering early and treating disease. Facilities which are now available must be expanded and made within the reach of all. Public education about the importance of periodic checkups and of healthful living habits must be continued and increased.—*Briefs*, June, 1944.

CLINICAL-PATHOLOGICAL CONFERENCE

ST. LUKE'S HOSPITAL—DULUTH

S. N. Litman, M.D., and Arthur H. Wells, M.D.

Malignant Hepatoma in an Infant

Dr. S. N. Litman: This two-months-old white male infant was admitted to the hospital six days before his death and one week after his mother first noticed that her baby's abdomen was unusually large and hard. She measured the child's abdomen at 17½ inches in circumference. The infant had been taking his food well since the time of birth and had been gaining normally. He possibly cried somewhat less than his brothers did when they were babies. However, he was quite active and not abnormal in the mother's opinion. There had been no jaundice and no change in bowel or urinary habits, no vomiting or other evidences of sickness. The mother had had a miscarriage at six months, six years ago. Her two living children, ages two and four, were in good health.

Physical examination was essentially negative except for a slight pallor in a well-developed infant with a decidedly protruding abdomen. There was a large, firm mass occupying practically the entire right half of the abdomen, thus causing the distension of the abdomen to be slightly asymmetrical. The mass could be felt at the costal margins above, at one finger length from the pelvic floor below and at the midline medially. Posteriorly, the costal vertebral angle had the same type of resistance to palpation. The mass was dull to percussion, firm and the medial edge was quite sharp. There were large veins visible on the surface of the anterior abdominal wall. The red blood cell count was 2,470,000, hemoglobin 8.5 grams, white blood cell count 6,500, and differential count: neutrophiles 41 per cent, eosinophiles 1 per cent, basophiles 1 per cent, lymphocytes 56 per cent, and monocytes 1 per cent. Bleeding time was six minutes, and the coagulation time two and one-half minutes. Urinalysis was normal and a red blood cell fragility test was normal. Two flat films of the abdomen revealed a large tumor mass occupying almost all of the right half of the abdomen and was considered to be of renal origin. The child ran a low-grade fever, generally below 100 degrees during the period of hospitalization. He weighed 5,385 grams. An exploratory laparotomy by Dr. O. L. McHaffie through a very small incision revealed a solid tumor mass, a biopsy of which was obtained. The child's immediate postoperative condition was quite poor. There was cyanosis, shallow respirations, and gasping for breath. One-half hour later the pulse was imperceptible and the child did not respond to stimulus. He died one and one-half hours postoperatively.

Dr. A. H. Wells: This case is now open for clinical diagnoses. We are withholding the histologic study of the biopsy material obtained at surgery.

Dr. C. O. Kohlbry: It is my impression that one must rule out several likely conditions including Wilm's tumor of the kidney, hypernephroma, carcinoma of the liver, hepar lobatum, and sarcoma of any of a wide variety of structures in the abdominal cavity. X-ray studies of the gastro-intestinal tract and the urinary tract may aid in clinically localizing the tumor process. This society will not soon forget a very similar infant patient of Dr. Sincock's. At necropsy this child had a congenital stricture of the anus with megacolon. We were feeling fecal matter and not a tumor in his abdomen.

Autopsy Findings

Dr. A. H. Wells: This two-months-old infant weighed 5,295 grams and measured 66 cm. long. He was rather poorly nourished and well developed. Outside of a patent ductus arteriosus whose lumen measured 2½ mm. in diameter and a small area of atelectasis in the lower lobes of both lungs, pathological findings were confined to the liver which weighed 1,450 grams. There was a huge rounded, slightly nodular surfaced tumor mass in the right lobe of the liver (Fig. 1) with a strong fibrous capsule continuous with the capsule of Gleason measuring approximately 16 cm. in diameter and representing approximately 80 per cent of the liver weight. The normal liver tissue was obviously compressed so as to form a crest-like layer over a portion of the outer surface of the tumor mass. The cut surface revealed coarse, irregularly-sized nodules in a moderate fibrous stroma. These nodules had the same mottling of light brownish-yellow with small areas of softening. The liver tissue of the left lobe was not unusual.

Microscopic Study.—In all of the sections from various parts of the tumor mass typical liver cells are arranged in cords. They are generally quite matured. The small rounded nuclei are only slightly larger than average, and tend to be slightly hyperchromatic. The cytoplasm is slightly reduced. There is no rhyme or reason to the arrangement of the cords and no identifiable portal elements. There are fairly frequent mitotic figures and one occasionally finds tumor giant cells and small areas where the liver cells are distinctly anaplastic in type

with larger hyperchromatic nuclei and a decrease in cytoplasm. Rarely one finds solid masses of anaplastic epithelial cells invading the fibrous stroma. There are



Fig. 1. Malignant hepatoma.

mild hydroptic changes in other parts of the liver and compression atrophy of liver cells immediately adjacent to the tumor mass.

Discussion

Dr. A. H. Wells: At first this hepatoma presented the problem of classification as to whether it was an adenoma or a low-grade carcinoma. The degree of maturity of the great bulk of the tumor cells was indeed impressive. While the finding of a few mitotic figures and even a few so-called tumor giant cells did not settle the issue, however, rarely could one find solid columns of cells in the fibrous stroma. From a clinical viewpoint the patient was decidedly anemic, ran a low-grade fever and was underweight particularly when the weight of liver tumor is subtracted from the child's weight. This problem of differentiating benign from malignant growths in the liver has much in common with a similar problem in connection with certain thyroid and kidney tumors. This difficulty may even present itself in the metastases from these sources. A simple and practical classification of primary tumors of the liver parenchyma is given by Wesley Warvi[6] in which adenoma and carcinoma are included as divisions of the terms hepatoma, cholangioma and cholangiohepatoma, depending on an origin from liver cells, bile duct epithelium or a combination of the two. A fourth group of tumors of the liver not containing specific hepatic elements have their origin from the variety of mesothelial structures present in the liver, particularly the vascular elements. Hamartomas have been defined as congenital tumor-like malformations characterized by a relative quantitative disproportion of the various tissue components normally comprising a given organ. These non-neoplastic masses may well be mistaken for tumor processes and called adenomas of the liver. As a matter of fact, their relationship to benign hepatomas is still to be clarified.

A knowledge of the classification of liver tumors has a very practical application in the treatment of these conditions. Single carcinomatous masses[1,4] have been resected resulting in probable cures. Resections of adenomas and adenocystomas have been comparatively frequent. Diffuse carcinomas so frequently associated with cirrhosis of the liver are of course nonresectable.

Dr. S. N. Litman: Dr. McHaffie and I were completely fooled clinically in this case. We were convinced it was a tumor of the kidney until the exploratory laparotomy and the resultant biopsy diagnosis of hepatoma. Steiner[5] recently reported two cases of primary carcinoma of the liver in children and reviewed seventy-five cases from the literature up until 1938. Additional cases are found in the literature reported by Hamburger[3] and Drummond and Tollman.[2] Slightly over 50 per cent of the cases occurred in children under two years of age. Sixty-eight per cent were in boys. The symptomatology was variable and the average duration of life was four months. Of these cases fifty-two were hepatomas, three were cholangiomas, and twenty-two, unclassified. There were metastases in 27.2 per cent of the cases and many of these were in the lungs. Benign tumors, particularly the cysts of bile duct origin, may cause a palpable mass and symptoms of pain similar to that evidenced in many of the carcinomatous tumors of the liver. However, the presence of anemia, loss of weight, weakness, fever, jaundice and ascites are more likely to be the result of malignant processes.

Summary

A case of malignant hepatoma in a two-months-old white male infant is reported with a brief review of the subject.

Final Diagnosis: (1) Malignant hepatoma: (a) recent exploratory laparotomy; (b) possible surgical shock; (2) patent ductus arteriosus; (3) pulmonary atelectasis, mild.

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PENICILLIN FOR LOCAL USE PRODUCED BY NEW METHOD

A new method of producing good yields of penicillin in hospitals for local application is reported by Dr. Sara A. Scudder, of the City Hospital on Welfare Island, New York (*Science,* August 25).

The mold is grown on a solid agar base containing substances which favor rapid production of penicillin in enough big drops so that they are precipitated like rain when the growth container is turned upside down.—*Science News Letter,* September 2, 1944.

PNEUMOCOCCIC SEPTICEMIA WITH AGRANULOCYTOSIS

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WHILE pneumococcic septicemia occurring in the course of pneumonia or middle ear infection is usual portal of entry or from an endocarditis is comparatively rare. Only a relatively few such cases have been reported in the literature.

Frost[1] discusses a case of pneumococcic septicemia, with meningitis and endocarditis resulting from a sinus infection. Lederer's case[3] was one associated with liver insufficiency and anuria. Nixon and Wright[4] mention two instances of puerperal sepsis, with death, due to pneumococcus Type I. Johnston and Johnston[2] report two unusual cases of vegetative endocarditis of the pulmonary valve due to the pneumococcus. In his discussion of bacterial endocarditis Thayer[6] mentions a very few cases which he terms pneumococcal endocarditis. Harold L. Rakov[5] reports a very interesting case of subacute bacterial endocarditis due to Type XVIII pneumococcus occurring in a child six years old, in which sulfapyradine was administered but had to be discontinued on account of agranulocytosis.

Report of Case

Mrs. M. J., aged twenty-seven, was first seen April 11, 1940, when she was brought in from another town, complaining of chills, fever, pain and swelling of the right ankle, shoulder and elbow, some pain in the upper chest, and marked weakness. Four days previously, after giving the history of a "grippy" cold two weeks before, she became suddenly ill with a chill and high fever, followed on the next day by pain and swelling in the right ankle. The fever continued, and in two or three days there was marked pain and disability in the right shoulder and elbow and slight pain in the chest anteriorly. A mild nonproductive cough was present at times.

As the patient first stayed at the home of a relative no laboratory studies were at first made, but she was put on sulfanilamide and salicylate therapy for a week without much of any benefit, and after a chill, with fever of 105°, hospitalization was insisted on. The patient's joint pains had definitely improved. For the first few days her fever ranged from 99° to 105°, pulse from 108 to 144, and respirations 22 to 26. Blood pressure was 110/85. In the physical examination nothing abnormal was found except for occasional moist rales in the base of the left lung posteriorly, a slightly roughened first tone or slight systolic murmur, some stiffness of the right elbow and slight swelling of the right ankle. An x-ray of the chest was entirely negative. Laboratory findings revealed a trace of albumin in the urine with a few pus cells; red blood cells 3,600,000, hemoglobin, 65 per cent, and white blood cells, 11,650 of which 78 per cent were neutrophiles. The sedimentation rate was 30 mm. Several blood cultures were positive for the pneumococcus, which finding was confirmed by the State Board of Health, who reported finding pneumococcus Type XX.

Four days after entrance to the hospital on April 23, 1940, sulfapyradine therapy was begun, 9.5 grams being given in the first twenty-four hours and 4 grams daily thereafter. For two days her temperature did not go above 100°. A few days later 100,000 units of specific Type XX pneumococcic serum were given in a period of forty-eight hours, so that on April 30 the temperature did not go above 99.6° and one blood culture was negative. However, after two or three days more pain reappeared in the right chest, with dullness and diminished breath sounds posteriorly. The leukocyte count varied from 15,400 to 17,500.

On May 1 the temperature was 102.8°, and in two days after an early morning reading of 98° a severe chill with fever of 104.8° occurred. With physical and x-ray findings of fluid in the right chest 200 c.c. of serous fluid was aspirated, containing pus cells but no bacteria. Six grams of sulfapyradine had been given but was decreased on May 5 to four grams daily, as the white count had dropped to 12,650. Blood cultures were again positive. Sulfapyradine was discontinued on May 8, as the white count had gone down on the seventh to 10,450 and on the eighth to 6,250, of which only 42 per cent were neutrophiles. Impending granulocytopenia was definitely suspected and confirmed by the future course of the disease.

The condition of the patient had been getting worse, with the fever ranging between 102° and 105°. Large doses of yellow bone marrow (60 capsules daily) and liver extract parenterally were given, but by the night of the ninth the leukocyte count was 3,350 and on the tenth had dropped to 1,750, with only 2 per cent granulocytes. On the next day the count went up to 6,000 cells probably due to the yellow bone marrow treatment, but there was still only 1 per cent granulocytes. The patient was becoming much more toxic and much weaker. Occasionally, there was a suggestion of a presystolic thrill, and the systolic murmur was definite. Her fever ranged from 104° to 106° and pulse from 120 to 160. The red cells continued to be over 3,000,000 and the hemoglobin between 57 per cent and 60 per cent. Some reddish areas appeared on the forehead and arms and definite jaundice was present. Later both arms were swollen, painful and ecchymotic, but there were never any characteristic throat lesions. In spite of strenuous treatment, the white count again slowly dropped to 1,500 on May 13, when the patient suddenly expired. Autopsy was refused.

Comment

In reporting the above case of a definite Type XX pneumococcic septicemia of five weeks' duration we can ascribe its origin probably on the basis of a bacterial endocarditis. Whether or not sulfapyradine treatment (used because sulfathiazole and sulfadiazine

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were not then in common use) which was carried on for about two weeks, could have eventually cured the condition is very much open to question. However, there is no doubt that the patient would have lived somewhat longer if granulocytopenia had not intervened. For a few days it appeared as if chemotherapy aided by specific serum was having some effect, but the real malignant character of the pneumococcic septicemia soon asserted itself, and no doubt its course would have been inevitably fatal even without the occurrence of the agranulocytic condition, as happens in practically all such cases reported in medical literature.

The question of the value of repeated blood transfusions in the treatment of these cases could be discussed. In our case after two consultations this procedure was abandoned. However, while most clinicians think that small repeated transfusions are helpful in the treatment of bacterial endocarditis and septicemias, most of them agree that they are of no or very little value in the therapy of agranulocytic conditions.

This case teaches us the potential danger of sulfonamide therapy in its possible depressing action on the bone marrow, even though the use of the drug here would be considered almost a necessity. Its toxic action continued over to the state of complete agranulocytosis even when its use was discontinued when the leukocyte count was normal. While 75 grams of sulfapyradine were used in this case, there was no hint of any symptom of toxic drug action until the leukopenia occurred. Then again, we see cases where fatal granulocytopenia results from an allergic-like reaction to small doses of the sulfonamide drug. We should ever keep in mind these disastrous possibilities.

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LOEFFLER'S SYNDROME

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PULMONARY infiltration associated with blood eosinophilia has been described by several authors in the past decade. The stimulator of this work was Loeffler, who in 1931 first described a clinical entity which has since been known as Loeffler's syndrome. In his work he demonstrated the migratory character of an infiltrative process in the lung associated with eosinophilia.

Other authors have described cases that resembled those of Loeffler. Some of these cases have been discussed as being allergic in nature while others had an underlying parasitic infestation as an etiological factor.

The case which I wish to present had neither an allergic background or evidence of parasitic infestation although it closely resembled the condition as described by Loeffler.

H. C., white, female, aged thirty-five, entered St. Joseph's Hospital on March 6, 1936, complaining of a severe frontal headache, cough and chills of one week's duration. The first manifestation of sickness came in the form of nocturnal chills and profuse sweating followed by marked prostration and headache. Her previous health had been good, and only the usual childhood diseases were noted in her past history.

Examination showed an acutely sick individual. An area of dullness was demonstrated in the left infraclavicular region, and in the left infrascapular area. Moist râles were heard over both these regions associated with bronchial breathing. On March 13, x-ray of the chest was reported as follows: "There is an extensive, rather uneven opacity involving the entire upper lobe on the left side. There is also a marked opacity of the extreme left base, obliterating the lateral portion of the diaphragm and the costo-phrenic angle."

On March 17 this report was made: "The left upper lobe exudate is denser than formerly and there is an increase in the opacity at the left base." Ten days later: "There is a marked increase in the opacity of the left lung which is complete. The heart is now considerably displaced toward the left."

The laboratory studies included urinalysis, blood cultures, tuberculin test, stool cultures, blood Wassermann test and complete blood studies. The last mentioned provided positive findings of diagnostic importance. On March 7, w.b.c. 17,900, Hb. 60 per cent; March 9, w.b.c 11,500; March 13, w.b.c. 16,500; March 16, w.b.c 17,250, eosinophiles 34 per cent; March 21, w.b.c. 17,600, Hb. 70 per cent, eosinophiles 50 per cent.

During the first three weeeks of hospitalization the patient was extremely ill. Her temperature ranged between 98.6° and 104° with daily chills and spells of sweating. Prostration became marked, and fluids were given parenterally. A diagnosis was not made, but there was some suggestion of pulmonary Hodgkins' disease, and, therefore as a last resort, deep x-ray therapy over the lung fields was instituted.

An x-ray report on April 8, 1936, several days after x-ray treatment was started, indicated a marked clearing throughout the left lung field by comparison with the film of March 27. However, there was now a moderate cloudiness in the right lung apex. This area was clear one week later.

Coincident with the improvement as demonstrated by the roentgenograms, there was also a definite improvement in the general condition of the patient as well as a decrease in the eosinophilia. On April 15, 1936, the eosinophile count was 28 per cent with a leukocytosis of 12,000. On May 6, 1936, the patient was discharged from the hospital and a month later both lungs were clear and the blood differential was within normal limits.

Shortly after this last report the patient went back

(Continued on Page 747)

EDWARD PURCELL

The First Physician in Minnesota

By JOHN M. ARMSTRONG, M.D.
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IN the year 1819 the Fifth United States Infantry was stationed at Fort Gratiot, near Detroit, under command of Col. Henry Leavenworth. On the tenth of February of that year an order was issued that the Regiment proceed to the upper Mississippi, and on April 13 a supplementary order directed that the command proceed to Fort Howard, thence by way of Green Bay, the Fox and Wisconsin rivers to Prairie du Chien. When the expedition left is not known, but it arrived at Prairie du Chien on June 30. The object of our government in sending troops into this northwest country is stated in a letter written by Surgeon Edward Purcell, a major in the Medical Department of the army, and at that time with the Fifth Infantry. The letter is as follows:

Detroit, March 20, 1819

Dear Brother,

I now write and most probably for the last time from this place. Not many days since I received information from the Surgeon General that the requisition I had made out for the Regiment for the current year had been received and that medical supplies would be directed to my care on the Mississippia, probably the Falls of St. Anthony.

A few days after I received this letter Major General Macomb, commanding the Department of the Army, arrived from Washington City and brought the orders that our Regiment should march for the mouth of the River St. Peters, which emptys into the Mississippia, as soon as navigation is open, which will be by the first of May. The St. Peters is in North Latitude about 45th, three degrees further North than this post. It is in that part of the country inhabited by the Indians called The Soux (pronounced "Soos"). They are a warlike and powerful tribe, but as our Indian affairs now stand, we have nothing to fear from them. The intention of our Government appears to Garrison the whole of our North and North West frontier; this with the view of cutting off British influence amongst the Indian tribes and protecting our frontier settlements, a very laudable intention. Our Regiment Garrisons, three Posts, one to be at the mouth of the St. Peters, which will be headquarters, and where I shall be stationed, one at the Prairie Du Chien (or dog meadow), and one at Fort Armstrong, about two hundred and fifty miles below the last mentioned place. As the Regiment is composed of 10 companies, we shall have 8 at Head Quarters and one at each of the other Posts. This will give us a very good society as we shall have at least 20 officers at our Post and many have wives. You may think it strange that I have consented to go with the Regiment out of the world, as you may call it, but the fact is I go, not because I like it, but because I think I can make money. I shall at least make as much as will pay for my lands in the course of three or 4 years and this will be doing much. During that period of time you need not expect to see me, and as for communications by letter, I will in my next inform you how to direct, in the meantime I wish you to write me as soon as you receive this and direct it to this place.

It is thought that we shall not get more than two thirds of our way this summer, and that we shall be obliged to remain 400 miles on the Mississippia below our intended post this winter. We go by way of Mackinaw and Green Bay, pass up from Green Bay, the Fox River, then cross over to the Ouisconsing, descend this river until we arrive at the Mississippia,

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this river will bring us out at the meadow of dogs, where no doubt we shall winter, and the next spring ascend the 400 miles until we arrive at our destined post.

We shall be obliged to build our barracks etc. etc., also a saw and grist mill. No doubt we shall live as much like farmers as Soldiers. I leave my lands in charge of an agent at this place by name, Henry J. Hunt, whose father has been a Colonel in our army & himself now a respectable Merchant & Citizen in Detroit. He will not only have charge of the lands that I own in this Territory but of a town lot in Parysburgh on the Miami of Lake Erie containing two acres, one town lot in the County town on Monroe on the River Raisin in the Michigan Territory, for which has been paid in full 100 dollars, also the deeds and patents of two quarter sections of land in the Illinois Territory, each containing 160 Acres, both amounting to 320 acres, together with some horses, Cows, Furniture, etc. etc. I mention this that in case any accident should happen to me, you may know where to apply to obtain my papers. I have also on an Island called "Hersens" at the mouth of the River St. Clair, near to where I purchased my lands, four horses and on the main a few miles up the River one mare, at my house that is within two miles of Fort Gratiot, I have one or two cows, some pigs, household furniture and axes, saws, etc., etc. etc. These are in charge of a tenant whose name is Ebenezer Shaw. It is my intention to remain in the Army five years longer, when I shall resign and go into private life, during this space of time we shall no doubt remain at the same post on the Mississipia. It was my intention did I remain at this place to visit you next summer but as affairs now stand, its utterly impossible. I have heard nothing of Lipton. Present my love to Father, Sisters Margaret & Anne.

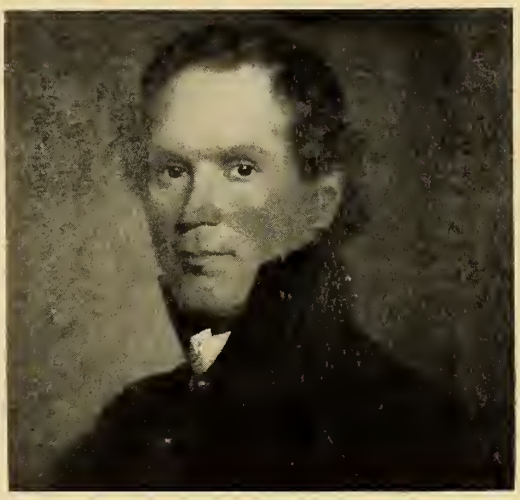
EDWARD PURCELL

As previously stated, the command reached Prairie du Chien on June 30. The journey to Green Bay was probably made by steamboat and the rest of the journey to the Mississippi by hand-propelled boats. At Prairie du Chien the expedition waited for Major Thomas Forsyth to arrive from St. Louis. On August 8 the troops, consisting of ninety-eight rank and file, embarked in fourteen batteaux and two large boats. In addition to these there were Major Forsyth's boat and the Colonel's barge. Twenty boatmen also accompanied the party. How many persons the barge and boat contained is not stated. On August 23 the Colonel and some of the boats reached the present site of Mendota at the mouth of the St. Peters river, as the Minnesota was then called, the majority of the flotilla arriving the next day.

It seems remarkable that this journey was made in fifteen days. The boats were what were known as Keel boats. When the nature of the river bank permitted, they were dragged by ropes and when not they were propelled by poles. In September, 120 recruits and officers arrived from Boston; so that in the winter of 1819-20 the personnel of the post could not have much exceeded 250 men. The troops immediately on their arrival began to erect log cantonments at the present site of Mendota, where the first winter was spent. The following spring the encampment was moved to the Springs on the left bank of the Mississippi, a short distance above the present bridge. In 1821 the log fort near the present site was occupied but not completed. The post was called Fort St. Anthony till 1825 when it was named Fort Snelling after Col. Josiah Snelling who succeeded Leavenworth in command in 1820.

After this perhaps unnecessarily prolix introduction, let us take up the subject of this paper, Edward Purcell, the first physician to practice medicine within our present Minnesota, though this part of the country at that time was part of Michigan Territory. Of Purcell's early life we are ignorant. It is known, however, that one Edward Purcell came to America from Ireland with his five children and settled in Virginia. This Edward Purcell was the father of our doctor. The mother, née Frances Lipton, had died on shipboard and was buried at sea. The year of the immigration is unknown but the first Federal census of 1790 gives him as the head of a family of five living in Hampshire County, Virginia, so Doctor Purcell must have been born previous to that date. The family later moved to

Pennsylvania where Edward Purcell, the elder, died May 8, 1836, in his seventy-fifth year. The name on his tombstone was spelled Percall and was accented on the last syllable.



SURGEON EDWARD PURCELL, U.S.A.
First physician to practice in Minnesota. Photo, courtesy of Miss Mary Caldwell Purcell.

As Doctor Purcell was the third of the five children and all were born in Ireland, we possibly are at liberty to place the date of his birth previous to 1785 and as he was married in 1808 that would make him at least twenty-three years of age at that time and twenty-eight when he entered the service of the United States as Surgeon's Mate on May 2, 1813. On April 18, 1818 he was promoted to Post Surgeon and on July 21, 1818, Major and Surgeon of the 5th Infantry. The accompanying portrait of Edward Purcell shows him in the uniform of a Major. It could not then have been painted previous to 1818. In 1819 he came to Minnesota and there was no one at Fort Anthony, during his residence there capable of painting such a portrait, furthermore it is stated that his effects after his death in 1825 at Fort Snelling never reached his family. However, he was on leave of absence for a period in 1824 so that it is possible that the portrait may have been painted at that time. Assuming that the portrait shows him as a man thirty-five to forty years of age, that again places the date of his birth about 1785. As this portrait is now in possession of his descendants, it is obvious that he did not have it with him at Fort St. Anthony nor was his family with him at that post, nor apparently were they with him at Fort Gratiot, as one may infer from no mention being made of them in his letter to his brother quoted in the beginning of this sketch. His wife was Elizabeth Shirk. Three children were born of this union. The youngest, a son named John, born in 1812, was grandfather of Miss Mary C. Purcell of Manhattan, Kansas, to whom the writer is indebted for the genealogical material, the two letters and a copy of the portrait. Of Doctor Purcell's medical education nothing is known. Examinations of medical men entering the Army were established early in the Revolutionary War, but were allowed to lapse thereafter so there is no record of his qualifications. The regulations of the Medical Department for 1814 provided for examination of candidates not graduates "from a respectable medical school or college" but that was after Purcell entered the service. His military record, as furnished by the Surgeon General and

Adjutant General's offices, contain no information regarding him other than that already given except that he was appointed from Virginia and was at Fort Mifflin in 1814, that he was ordered to Fort Gratiot on May 18, 1817 and was retained as Major and Surgeon June 1, 1821, there having been another reorganization of the Army at that time. The reason perhaps that but little is known about Purcell by these offices is because the records of Fort Snelling to 1857, when the post was temporarily abandoned, never reached Washington. My inference is that they were then sent to St. Louis, remained there and were destroyed during the disturbance incident to the Civil War. Despite this lack of information much may be gained from other sources. In 1816 James Mann published at Dedham, Massachusetts, "Medical Sketches of the Campaigns of 1812-13-14." This book is one of the first American books on military medicine and is credited with influencing many reforms regarding the Medical Department of the Army made in 1818. The book contains two articles by Surgeon's Mate Purcell, one a description of the illnesses affecting the men under his care at the time the sick were evacuated from Plattsburg to Burlington, Vermont, on September 5, 1814, and the other, shorter than the first, narrates three case histories of soldiers suffering from a disease of the mouth. Probably we would now diagnose the illness of these men as Vincent's angina. He describes his treatment as futile till he prescribed Fowler's solution, which proved efficacious. As regards the sick removed from Plattsburg, they were about 815 in number, fifty of them wounded. They were transferred to Crab Island, but as no adequate provision had been made there for them, Dr. Purcell on his own initiative succeeded in removing them to the hospital at Burlington in open boats, across the lake, a distance of twenty-five miles. From this time till he was at Fort Gratiot we have no information regarding his station.

Of his activities at Fort Snelling government records are also lacking. Our Minnesota histories all record the fact that the garrison there during the first winter suffered severely from scurvy, a common complaint in isolated army posts at that time. The disease was also prevalent during the second winter. With regard to this, the statements of Prescott[5] and Mrs. Adams[1] must be accepted as the most authentic as Prescott was there in the early spring of 1820 and Mrs. Adams was at Fort Snelling in 1823. Sibley's[6] statement is hearsay evidence and Mrs. Van Cleve[7] was less than a year of age at that time. Folwell[2], who apparently examined all sources of information, states:

> The cause of this sudden and violent outbreak of disease was attributed to the villany of certain contractors or their agents, who drew the brine from the barrels of pork to lighten the loads on leaving St. Louis and refilled them with river water before delivery at Fort Snelling.

In a footnote to the above he says, "The number of fatalities is variously given. Mrs. Van Cleve estimates that forty succumbed, Sibley that nearly one half the command perished." Prescott says that "some fifty or sixty had died and some ten men died after I arrived." Mrs. Van Cleve tells of the relief obtained by the use of "spignot root," doubtless spikenard, then and now abounding in the region. Prescott attributes the abatement of the malady to "the groceries which he brought and a quantity of spruce that Doctor Purcell had sent to the St. Croix for." It would seem to me that spikenard root would be difficult to find in the winter with snow on the ground and that the other account is nearer the truth. Mrs. Adams also says the flour and cornmeal issued the soldiers had been ruined by dampness and many of the men refused to eat it.

Dr. Samuel Forry[3], an officer in the Medical Department of the Army, in 1842 wrote as follows regarding the incidence of scurvy at Fort Snelling:

"In 1820 at Council Bluffs and Fort Snelling there were 503 cases of Scurvy and the number of deaths 168, of which 157 occurred at Council Bluffs." The report also states that "in the entire Army for 1819 there were 7 cases of Scurvy and no deaths, and in 1821, 86 cases with 5 deaths."

There is some discrepancy here which cannot be explained, as our local histories certainly attribute more than eleven deaths due to scurvy at Fort Snelling in the first quarter of 1820. Fort Snelling, at that time, of course, was called St. Anthony.

In compiling his report, Dr. Forry examined about 4,000 quarterly sick reports and obtained from the Adjutant General's Office the mean strength for corresponding periods as compiled from the post and regimental returns.

Let us now turn to the report of the Surgeon General[4] for the year 1820 which no Minnesota writer appears to have consulted:

At St. Peters the prevailing disease was scorbutus . . . It appears from the official reports, that the troops at St. Peters . . . were exposed to many of the causes both predisposing and exciting of scurvy. During their progress . . . from Green Bay up the Mississippi they were not infrequently obliged to labor in the water beneath the rays of an ardent sun, sleeping in their wet clothes and exposed to a damp atmosphere impregnated with malaria, they became reduced by disease, and in this state of predisposition to scurvy they began, late in the season the establishment of their winter quarters . . . at St. Peters . . . they were destitute of groceries and vegetable food, except flour and corn which were more or less damaged from having been wet; and their animal food, which was principally salted, they were obliged to eat during a portion of the winter in a putrescent state. This condition of the meats, however, was as far as practicable corrected by washing and boiling in charcoal.

The report also states that in the last quarter of 1819 there were but forty-two deaths, from all causes, in the Northern Division, one-half of which were at St. Peters. The report then goes on to say:

The number of men reported at Camp Missouri on the first of January 1820 was 788 and at St. Peters 228, making an aggregate of 1016. The total of cases (of all illnesses) for the first quarter at these two points was 895; of these 503 were of a scorbutic character and the number of deaths from this cause was 168.

As this is a joint report on the troops at Fort Snelling and Council Bluffs one cannot assign any definite number of deaths to either post. I may add that the rations furnished the troops at Council Bluffs were as bad as those at Fort Snelling. There was another cause for the scurvy, however, not mentioned by the Surgeon General, and that was the liquor ration, then regularly issued to each soldier. Mrs. Adams says, "Whiskey rations were issued to the troops regularly, however, and sometimes it seemed that about all they had was whiskey." At a slightly later date we find in some of the official correspondence between the commissary officer at Fort Snelling and the Commissary General at Washington a suggestion by the latter that an additional allowance of 1,500 gallons of whiskey be added to the former's requisition for supplies "in order to keep the soldiers contented." I may say that the Medical Department of the Army had been actively opposing the whiskey ration for some years before this time, having noted its deleterious effect, particularly during the war of 1812. In 1830 a vegetable ration was substituted for whiskey.

From 1822 to 1826 the health of the garrison at the fort was good. There were but two deaths between September 1822 and September 1823, six in 1824 and seven in 1825.

What was the life at Fort Snelling in these early days? In the summer, hunting was the principal amusement and furnished diversion for both officers and men.

In the winter, or from the time the river froze till the ice ran out in the spring, there was no communication with the outside world and often no mail. All were closely confined of necessity to the barracks, and life must have been monotonous in the extreme. Intemperance, a fault of the time, both among the officers and men, was almost universal and produced deplorable effects, quarrels and even duels between the officers. White feminine society was practically lacking. But four women were at the post the first winter and not many more later. The Indian women were plentiful and complacent. Practically all the unmarried officers had mistresses among the wigwams and some of the few married officers were not exempt from this diversion. Some acknowledged them as wives, but the greater number did not. Many had half-breed children.

In 1824 Purcell was away on leave and the following letter is preserved, written to him by his Hospital Steward. Evidently things were not going well at the hospital. It depicts, between the lines, social conditions at the post.

June 5, 1824.

Dear Doctor:

In consequence of what has happened between yourself and me I venture to address you familiarly, although contrary to military ettiquette. Since your departure from this post, no exertions on my part have been wanting to arrange your business in proper order. I found many articles of your property in different places, which I have collected and taken care of. I have taken from your room, two trunks, one of which I delivered to Mr. Gibson, and the other to Mr. McKenzie, also some letters for Mr. Gibson. It is with a deference to him, that I would speak of Mr. Gibson, his manner of managing affairs is in my humble opinion calculated to do no great honor to myself or service to his employer. I need not mention some of his habits to which he is addicted as you are well acquainted with his general conduct for some time past and I will only say there is no reformation. He places no confidence in those who are under his direction; wishes to manage every minute particular concerning the hospital himself, yet he appears entirely ignorant of the manner of doing it and his domineering position is not calculated to gain him much information. I shall obey his orders promptly so far as I am bound to do it, unless they are prejudicial to your welfare, in which case I shall feel a pleasure in protecting property for which you are responsible, and promoting your interest at all hazzards. Were it not for the numerous obligations which bind me to your interest and the anticipation of your return to this post, I would immediately resign the situation in which it appears I am not considered by Mr. G. worthy of that consideration which you have reposed in me, and in which I venture to say you have never been deceived. Amenable to the Colonel's orders of the first and third instances, I can do no more, no less than duties assigned to a hospital steward by the regulations,which does not exactly agree with your private instructions to me. I have said nothing to the Colonel upon the subject, considering it was my duty to obey and not my business to inquire into the Commanding officer's reasons for issuing his orders. I have been explicit in stating circumstances which I would wish may be in confidence for your own particular information, and that if on your return you did not find me at the hospital you may not be disappointed.

I have omitted many circumstances relative to Mr. G.'s conduct which affect my own feelings and I shall endeavor to bury them in oblivion. Since your departure from this post, there has been a vacancy in my mind which no substitute can fill which you will no doubt perceive from the tenor of my letter. My spirits are dejected and my health rather declining in consequence of the contemplated situation which I am placed. The affairs of the hospital I have managed in the usual way as far as I have been permitted. It is a general time of health at the post. If it is consistent with your views please favor me with an answer to this letter. Be pleased to accept my affectionate esteem and best wishes for your welfare.

I am, Sir,

Very respectfully

Your obedient servant

Perrin Barker

P.S. The land patent which you left in my care I have an opportunity of selling for ——— provided I could obtain a lawful convey within two months.

Respectfully yours,

Barker

N.B. Mr. Graham has returned from his ———— up the St. Peters in good health and wishes to be remembered to you. He regrets that he could not have seen you before your departure and says that in consequence of want of time before the mail closes he cannot write to you, but that he will write at the first opportunity.

Yours etc.

P.B. I have made two additions to this letter already and I will now add that what may happen to affect my own feelings I have resolved to remain in my present situation for your interest and hope for better times.

Dr. E. Purcell

P. B.

Among the papers of Alexis Bailly, an early trader here, in the Minnesota Historical Society, may be found two references to Purcell. The first, dated at St. Peters, July 17, 1822, is an agreement between Edward Purcell and Peter Powell, the latter indenting his son William to Purcell for a period of three years as a servant, Purcell to clothe, maintain and lodge him and pay him four dollars per month. The second item is a memorandum of goods sold to Purcell by Bailly. It is worth giving in full as it shows the prices prevalent in the wilderness and the cost of transportation.

Alexis Bailey Dr. Doct. Purcell

1823			
Augt. 26	—to 2 prs. Socks		1.50
	" 1¾ yd. blk. Silk		2.63
1824			
Jany. 20	" 9 galls. Brandy @ 3.50		31.50
	" 1 keg to contain it		.75
	" 2½ yd. Sup. fine cloth		30.00
	" 1 pcs. Callico 28 yd. 50c		14.00
	Transportation of the above to St. Peters		3.50
		Dolls.	83.88

Bailly also makes a memorandum that he is to purchase a clasp for Dr. Purcell but could not get one.

In a letter among the Johnson papers in the Carnegie Public Library at Sault Ste Marie, dated at the Falls of St. Anthony, February 19, 1824, to a Mr. George Johnson, Purcell regrets that his duties had made him "unable to pay more attention to you than I have . . . I present to you with this scrall a Lancett, it may be of use to you in the woods, it has been in my possession for many years." George Johnson was a fur trader and later Indian agent.

In 1823 one John Marsh came to Fort Snelling as tutor to Colonel Snelling's children. Dr. George D. Lyman, in his book "John Marsh, Pioneer," suggests that March may have studied medicine under Purcell. If this was so, then we must credit Purcell as the first to give medical instruction here.

There remains but little more to be told except that Doctor Purcell was the first United States officer to die in Minnesota, and also the first physician. The cause of his death is not recorded, but it is said to have been sudden. He was buried at the post cemetery at Fort Snelling. Some thirty-five years ago the cemetery was moved and all records of burials in the old cemetery are now lost. Although Purcell died January 11, 1825, it was not till 1830 that administrators of his estate were appointed by the court of Wayne County, Michigan (at Detroit) and the final probate papers bear the date 1832. Strange to say, the only information regarding him in these prolonged proceedings is that he was "late of the United States Army." No title, no date of death, no place of death, nor are any heirs mentioned either by name or implication. The only statement is that $1,425.96 remained to be distributed.

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NATIONAL SOCIALISM OR THE AMERICAN WAY—WHICH FOR US?

In the years 1936 and 1937 the author spent considerable time in Germany. His comments on his observations are enlightening:

"I wondered how an intelligent people, such as the Germans surely are or were, would let themselves be thus duped. This led to a study of the various steps by which National Socialism had fixed its hold upon that nation. I wanted to find out what made National Socialism work. I give you briefly the results of that first-hand study.

"In order for National Socialism to work, certain definite steps must be taken, and they are the same for Fascism, for the two differ in name only:

"1. The people must be made to feel their utter helplessness and their inability to solve their own problems. While in this state of mind there is held up before them a benign and all-wise leader to whom they must look for the cure of all their ills. This state of mind is most readily developed in a time of economic stress or national disaster.

"2. The principle of local self-government must be wiped out, so that this leader or group in control can have all political power readily at hand.

"3. The centralized government while appearing in form to represent the people must dutifully register the will of the leader or group in control.

"4. Constitutional guarantees must be swept aside. This is accomplished in part by ridiculing them as outmoded and as obstructions to progress.

"5. Public faith in the legal profession and respect for the courts must be undermined. Let me pause to say that these various steps as thus enumerated are not necessarily undertaken in the order in which they are here listed. In fact, the subordination of the lawyers and of the courts is likely to be one of the early steps taken by those interested in setting up a National Socialistic regime. As has recently been well said, 'There is no place for the lawyer in a totalitarian state.' Lawyers as champions of the peoples' rights must be suppressed at an early stage.

"6. The law-making body must be intimidated and from time to time be rebuked, so as to prevent the development of public confidence therein.

"7. Economically, the people must be kept ground down by high taxes which under one pretext or another they are called upon to pay. Thus they are brought to a common level, and all income above a meager living is taken from them. In this manner economic independence is kept to a minimum, and the citizen is forced to rely more and more upon the government that controls him. Capital and credit are thus completely within the control of the government.

"8. A great public debt must be built up so that citizens can never escape its burdens. This makes government the virtual receiver for the entire nation.

"9. A general distrust of private business and industry must be kept alive, so that the public may not begin to rely upon their own resources.

"10. Governmental bureaus are set up to control practically every phase of the citizen's life. These bureaus issue directives without number, but all under authority of the leader to whom they are immediately responsible. It is a government of men and not of laws.

"11. The education of the youth of the nation is taken under control, to the end that all may at an early age be inoculated with a spirit of submission to the system and of reverence for the benevolent leader.

"12. To supplement and fortify all of the foregoing there is kept flowing a steady stream of governmental propaganda designed to extol all that bow the knee, and to vilify those who dare raise a voice of dissent.

"I tell you I saw all of these steps consummated or rapidly being consummated in Germany in 1936. You can readily recognize them as the earmark, the vital features of National Socialism. They are the cogs that made the Nazi machine work. Many a good and sensible German was drawn into its clutches, not realizing what he was getting into until it was too late to extricate himself. I came to know a German in Munich fairly well so that he would talk to me, somewhat freely. I put to him this question, 'What is the most significant thing you consider Hitler has done for your people?' His reply was this, 'He has brought us all to a common level,' and then in a whisper he added, 'But, my God, what a low level.'"—From "National Socialism or the American Way—Which for Us?" address by Malcolm McDermott of the faculty of Duke University Law School, presented before the North Carolina Bar Association.

President's Letter

MEETING ATTENDANCE ENCOURAGING

It is highly encouraging to officers of the Minnesota State Medical Association to observe the consistent willingness of busy practitioners to attend medical meetings and thus keep abreast of developments, both scientific and social, of the times.

The attendance at sectional meetings, held recently in the state, has been excellent, in spite of the fact that those who came were over-burdened with work and were often obliged to travel long distances and return on the same night of the meeting.

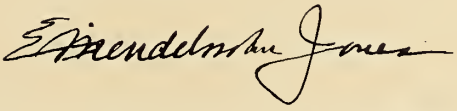
The good doctor and the successful doctor, under our American system, is always more interested in medicine than in anything else. He will go to any length necessary to keep up with new developments in his profession and to improve his professional skill. Would he do so if his job depended upon the favor of Washington bureaucrats and his advancement upon seniority? It is almost certain that he would not. That virtual certainty is the best reason for opposition to any further encroachment of government upon medicine.

Because the dangers of bureaucratic medicine are acute, it is also highly encouraging that the county medical advisory committees, to whom the survey of medical services in the state has been entrusted, are doing their work carefully, seriously and with impartial thoroughness. Returns on the questionnaire about the need for additional doctors, for more hospital beds, more nurses and for better public health protections, are now coming in to the State Office. The members who prepared them are to be congratulated, without exception, on the lofty character of their response.

There is only one way to know whether medical needs of the state are being met; and that is by the honest and impartial testimony of the men who are actually engaged in a day-by-day effort to meet those needs.

There is only one way to circumvent unsound plans of ill-informed social reformers; and that is by gathering the facts and acting promptly on the basis of those facts.

In this survey, and in a vigorous, state-wide effort to affect improvements thus shown to be needed, the state association will have the best opportunity in its history to contribute to the public welfare and to safeguard for the future the private practice of medicine in Minnesota.



President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

MINNESOTA CORONER SYSTEM

NO group in Minnesota has a greater responsibility for the inadequacies of our antiquated coroner's system than the physicians of the state. The problems involved are those of medicine and law. Much of what was considered good in medicine decades ago when our coroners' laws were established is now obsolete. This is an age of specialization and will become more so with the discovery of more useful knowledge. Yet we have in force a system for the protection against homicide which frequently depends upon a layman's knowledge of medicine. Furthermore, if a conscientious coroner performs his many duties properly he must have a serviceable understanding of general medicine, pathology, toxicology, serology, ballistics, forensic medicine, photography, criminology and various aspects of the law. These features of crime apprehension did not seem necessary when our coroner's system was first adopted.

Over the past twenty years I have had the opportunity of seeing coroner's departments functioning in seven different states of the Union, and have a reading acquaintance with those of other states. Since the coroner's duties revolve primarily about the most serious of crimes committed against organized society it is startling to have visualized the contrasts of competence and efficiency of the scientific methods used in some areas of the country compared to the almost haphazard organizations in other states.

It must be agreed that the coroner, or medical examiner, or medical referee, it makes no difference what he is called, adds but one important feature lacking in the already established specialized fields of crime detection and punishment. This one feature is the acquisition and appraisal of all medical evidence in connection with a death. All other miscellaneous duties of the coroner including his inquest can be and should be the responsibility of those better trained for the purposes such as the police, prosecuting attorney, or judge of the community. In other words, he should be the medical consultant in specified cases of death. A discontinuance of all time-consuming nonmedical duties will attract more and better medical men to the position of coroner. Since each county cannot afford a physician specially trained in forensic medicine and since he is the present qualified specialist in this field, practical legislation should be instituted whereby these medical specialists are available for consultation and assistance, particularly in the rural areas. A university connection of this medical service has many advantages and has reached a peak of perfection in European countries.

I do not want to belittle the efforts of the many conscientious and capable coroners of this state. They undoubtedly do the best they can with the knowledge, facilities and finances at their disposal. Much can be said in favor of certain aspects of the coroner's system. However, a county coroners' organization integrated with a state consultation and laboratory service would serve the welfare of the people far better, and can be accomplished without a greater expense than the present system.

There are many deficiencies of our present state laws governing the coroner's office. I would like to list a few badly needed improvements.

1. The county coroner should be an approved physician. His duties are in the field of medical diagnosis.

2. He should have the responsibility for the preliminary investigation of all medical aspects of all deaths resulting from violence or casualty, sudden or unexpected deaths while in apparent health or deaths from obscure causes, when the cause of death is not known by a physician, when it occurs in any unusual or suspicious manner, or when a body is to be cremated.

3. It should be his duty to order a pathologist, preferably when distance and time permits, from a central or State Coroner's office or a district pathologist to perform an autopsy, if in his or the prosecuting attorney's opinion this examination might shed any light whatever upon a complete solution of the case. Postmortem examinations performed by physicians outside the specialty of pathology or even by pathologists not

experienced in forensic medicine are not adequate.

4. Facilities for toxicologic, histologic, bacteriologic, and serologic study should be available under some financial arrangement whereby the coroner does not forego an indicated chemical or other biologic analysis because of the additional expense. Non-biologic subjects should be handled through specialized departments under police responsibility.

5. The present coroner's inquest should be critically reviewed by the prosecuting attorneys and judges of our state with an idea of revising it or doing away with it altogether. Evidence given the coroner under oath may serve the purpose and eliminate duplication of effort and expense.

6. A system of selecting a state medical examiner or coroner, or medical referee, whatever he may he called, and possibly the county coroners on the basis of merit is essential to the best interests of the public. The present method of political selection of coroners too often does not result in the best available service to the public. Since the duties of these offices are highly technical in nature and not policy forming, it is considered best to select the candidates purely on the basis of ability and efficiency through one of the few practical nonpolitical merit systems similar to the one used in Maryland.

A careful review of the entire subject by the Minnesota State Medical Association in conjunction with the proper law enforcement groups of the state is indicated.

ARTHUR H. WELLS, M.D.

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A BLOOD TRANSFUSION IDEA

WE all agree, I am sure, that the medical record for outstanding work among the armed forces under all conditions, is most creditable. This high standard of success in treating the sick and wounded must be in a measure credited to the triumvirate,—the sulfa drugs, penicillin, and blood plasma. All three have saved the lives of many soldiers. This combination will continue to be of indispensable value all through the war.

It is obvious, however, that after the war, blood plasma will not be so readily available to the public as it was to the armed forces. Blood banks will undoubtedly be closed, and then the routine blood transfusions will again have to be resorted to.

Believing this to be the case, I should like to suggest an idea which, if perfected, would make blood transfusion as simple as giving blood plasma. The suggestion is that an attempt be made to discover either a chemical or a biological agent that will neutralize all agglutination that takes place when different blood groups are mixed. This neutralizing agent when mixed with the freshly donated blood will perfect it so that it may be given to the patient immediately. If this neutralizing agent against agglutination can be perfected, transfusion will then be reduced to the same simple and swift method as giving blood plasma. And it is self-evident, whole blood will in many cases be more effective than plain blood plasma. No pretransfusion laboratory work will be necessary.

The extensive knowledge on blood to date, should lend itself to discovering such an agent. Our research laboratories, given the problem, might solve the present agglutination difficulty quite readily.

Perfection of such an agent will reduce the blood transfusion problem of today, so that the blood may be administered even by the rural general practitioner wherever he may be located.

JULIUS J. HEIMARK, M.D.

POSTWAR PRACTICE

SUFFICIENT replies have already been received from the questionnaires sent medical officers in the military and USPH services by the Committee on Postwar Medical Service of the AMA to justify certain conclusions as to the

wishes of these medical men for the postwar years.

As shown by the report of the Committee* 90 percent of the graduates since 1937 want further medical training—a half of them for a period of a year or more, and more than three-fourths will seek specialty board certification. About three-fourths of the older graduates also want further training.

As is to be expected, about three-fourths of the older group plan to return to their former practices. Many of the youngest group had not entered private practice or had not become well established, and it is not surprising that less than half of them plan to return to their former locations.

Practice in cities of 25,000 to 250,000 was chosen by 85 per cent of those indicating the desire for new locations. About a third preferred general practice, a half the specialties, a few part time specialties, and about ten per cent government jobs. About one-half desired association with medical groups.

It may be concluded, therefore, that the capacities of the graduate medical schools and the hospitals will be overtaxed following the war. The cities are apparently going to have an influx of doctors with ambitions at least to become specialists. One can foresee that the supplying of the country districts with general practitioners is going to be a problem if the wishes of a considerable portion of the doctors in service materialize. This questionnaire represents the present wishes and intentions of service doctors. By the time they finish service and are ready to settle down, a larger percentage may find positions in government hospitals desirable, and it is to be hoped more will prefer general practice in the smaller communities. However praiseworthy the ambition to become a certified specialist may be, the out and out general practitioner, many of whom have interest in certain specialties, should continue to make up the bulk of the profession. A profession top heavy with specialists is undesirable.

Doubtless the present wishes of service men as indicated by this questionnaire will undergo some modification when discharges are received. Each State Committee on Postwar Medical Service will have an important function to perform in aiding the redistribution of physicians in the best interests of the public and profession.

*Postwar Planning. Report prepared by Lt. Col. Harold C. Lueth, Liaison Officer with the AMA for presentation to the Committee on Postwar Medical Service and the Council on Medical Education and Hospitals. Jour. AMA, 125:558, (June 24) 1944.

LIFE MEMBERSHIP IN COUNTY MEDICAL SOCIETIES

COUNTY medical societies apparently have never provided for life memberships. While not applicable for the smaller societies, there are some good reasons why provisions for such membership might be made for the larger societies, at this time particularly.

The average physician is better able to pay county society dues in his prime. He generally continues practice until some disability, incident to age, forces his retirement from active practice. Then, in Minnesota at least, he is eligible for Affiliate Membership. During the latter years of diminishing practice he is less able to pay his society dues.

During these war years the average physician is enjoying (?) a larger practice and a greater income. At the same time his income taxes are the highest they have ever been and presumably higher than they will be after the war. In whatever income bracket he may be, a payment of a lump sum for life membership in his medical society would constitute a saving of one-quarter to over one-half of the amount in income tax reduction.

A table of the approximate costs of life memberships, taking into consideration the various dues and the member's age, has been worked out,* based on the successful plan adopted by the American College of Physician's Life Membership Plan. According to this table, if the yearly dues are $15.00, a member under the age of forty-five would pay $300.00 for a life membership, the amount diminishing to $100.00 for a member sixty-one or over. The payment of $300.00 in one sum would result in a saving of one-quarter to one-half or more of this amount in taxes, depending on the physician's income bracket.

The funds so collected could be invested, in whole or in part, in government bonds or in securities suitable for trust funds, and the income used for society expenses. It would seem that

*Swanberg, Harold: County medical society life memberships and endowment funds. Miss. Valley M. J., 66:73-77, (July) 1944.

a portion of such life membership payments would have to be appropriated each year for current expenses, as the dues of most societies are determined according to current needs.

Objection might be raised that such payments in advance might be poorly invested or spent, which might result in future financial embarrassment. However, many of the larger societies have funds in the hands of able committees and do not encounter difficulties. Bonding is an additional safeguard.

The precaution should be taken that the society's Articles of Incorporation or Constitution state clearly that the purpose of the society is mainly scientific in nature, to avoid the possibility of a tax being imposed on the funds collected.

The proposal of providing for life membership in county medical societies has points in its favor and merits serious consideration on the part of the larger county societies.

QUARTERLY REVIEW OF SURGERY

This new publication made its first bow in November, 1943, and is appearing every three months.

Its purpose is to present in more or less abstract form the advances in clinical surgery as gleaned from the surgical literature of the world. While designated particularly for the surgeon, it should be of definite value to any physician.

The issues of 100 or more pages each, printed on high grade paper, present the material classified under various headings, such as Surgery of the Thorax, Abdomen, Kidney, Blood Vessels, Bones and Joints, General, et cetera. Each issue also contains a cross-reference subject and author index.

The *Review* is published by Quarterly Review of Surgery, 314 Randolph Place North East, Washington 2, D. C., at a yearly subscription rate of $9.00. Its distinguished editorial board is headed by Henry N. Harkins, Johns Hopkins University.

If the high caliber of the first issues is maintained, the *Review* should be a valuable addition to medical literature.

LOEFFLER'S SYNDROME

(Continued from Page 734)

to work. With the exception of minor complaints she remained in good health until November, 1942. At that time she again had chills and sweating spells. An x-ray of the chest showed infiltration in the left upper lobe much like that seen six years earlier. Sulfathiazole was given, but one week later the general symptoms persisted and there was a marked clearing of the left upper lobe, but a new similar lesion was present in the right upper lobe. The eosinophiles in that week had increased from 17 to 50 per cent. X-ray therapy was again given over both lung fields with a prompt resolution of the lesions, and a disappearance of general symptoms. The eosinophiles decreased to normal within a period of one month. Since then the patient has remained well.

At no time during either episode were we able to demonstrate a parasitic infestation. Subsequent studies failed to reveal an allergic state. The tuberculin test has always been negative and sputum studies showed no evidence of the presence of fungi or acid-fast bacilli.

Loeffler's syndrome seems to be a definite clinical entity. The etiology is unknown and the disease is said to be self-limiting. The diagnosis is usually made on the presence of an eosinophilia and transitory pulmonary infiltrative processes. This case certainly was much more severe than those classified as Loeffler's syndrome. Undoubtedly the x-ray therapy brought about a remission of symptoms on both occasions. Whether this form of treatment is necessary depends on the persistence and severity of the individual case.

Conclusions

1. A case resembling Loeffler's syndrome which was followed for a period of six years is presented.
2. X-ray therapy brought about a remission twice.
3. There are undoubtedly many cases that are unrecognized because of insufficient blood studies and lack of severe symptoms.

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MORTALITY FROM TUBERCULOSIS

The remarkable decrease in tuberculosis mortality, which resulted in lowering tuberculosis from one of first rank in numerical importance to seventh, conceals the fact that this favorable situation does not hold for all age groups; from early adulthood to age thirty-five it is still the first killer among diseases. Mortality from tuberculosis is highest in large cities, lowest in rural areas. The rate for males is considerably higher than for females and the disease is still much more fatal among the non-white races—J. YERUSHALMY, H. E. HILLEBOE, M.D., C. E. PALMER, M.D., in *Public Health Reports,* October 1, 1943.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

EDUCATION AND LICENSURE MAKE THE "MERRY-GO-ROUND"

Some rather startling quotations appeared in Drew Pearson's Washington Merry-Go-Round column of Sunday, July 30, from testimony given at Senate committee hearings on health, conducted by Senator Claude Pepper. So far, the complete text of the testimony has not been made available and discussion of the exerpts quoted by Pearson must therefore take into consideration the possibility that witnesses were improperly quoted. Nevertheless, the wide publication given to the column has raised important issues in the minds of many thoughtful people, especially with respect to problems of medical education and licensure.

Dr. Alan Gregg, distinguished medical director of the Rockefeller Foundation, is quoted as saying at this hearing, for instance, that medical schools in the United States are "turning out physicians for middle and upper class patients in cities and not for the great mass of the population in rural communities."

Idea Is Abhorrent

As it stands, that statement is a curious distortion of the truth and its implications are certainly abhorrent to most Americans. It would appear from the statement, indeed, that what is needed in the United States is a double standard of medical practice, one for the rich and well-to-do, and one for the poor; one for city dwellers and one for farmers—an idea which comes oddly from the representative of an institution which has spent millions to bring the best in medicine to remote and uncivilized sections of the world.

The truth is that medicine has moved steadily toward a very different ideal in America. That ideal has called for the best in medical service for every American regardless of income or location; and it has gone far enough along the road to realization to show that its ideal is practical and capable of realization. Indeed, it has already been realized for a vast number of people, including residents in rural districts, as well as the well-to-do in the cities.

The fact that this ideal is not yet fully realized in all parts of the country for all individuals should lead, logically, to a greater determination to find ways and means of achieving it. To propose, instead, a lower standard of service for a large section of the population seems a curious lapse from logic as well as a violation of the traditional philosophy of medicine.

It should be remembered, in discussions of this question, that medical service has very little in common with other essentials to healthy living, such as food, shelter and clothing. No one in his right mind would aspire to homes with heated swimming pools, for example, for everybody in the United States, either in the city or the country. But heated swimming pools, though they may accompany the finest type of house the architect is capable of building, are not necessary to comfort or well-being. It is perfectly possible to maintain a high standard of healthy living in modest houses, at a small fraction of the cost of dwellings maintained by the wealthy. The farmer, about whom Dr. Gregg is primarily concerned, may also get along very well in any shoe which fits and is reasonably weather-proof, even if it is not custom-made; but if he fractures a hip, nothing short of the best medical knowledge and skill is good enough to put him back on his feet again. He may receive that service in a ward bed without private telephone or radio; but he has a right to expect precisely the same skillful attention for his hip as the wealthy city man in the same predicament. It is unthinkable that he should be provided with less, for the simple

reason that anything less than the best may easily leave him with a lifetime disability or even deprive him of life, altogether.

Furthermore, it is well within the possibilities of our American system of medical practice to provide just such medical attention to every American, regardless of where he lives or what his income may be. In any case, even with the best of motives, to place the emphasis in education upon quantity and cost instead of perfection, in the belief that some kind of lesser-trained, more widely spread service will meet the need in the rural districts, will serve no good purpose for the farmer or for medicine.

State Licensure Attacked

The embattled question of state licensure also provoked severe strictures upon existing methods from Dr. Gregg.

"What is happening now," said Dr. Gregg, as quoted on the subject by Pearson, "is that, under cover of an examination, the state boards are frequently determining who shall be allowed to practice in the state. This is jealously guarded as an economic privilege of the profession while explicit responsibility for a sensible policy of distribution of medical care is neglected."

The charge, implicit in this statement, that state licensing boards arbitrarily manipulate licensure for the benefit of intrenched members of the profession is obviously made by a man who knows little about the functions and aims of leading state licensing boards, such, for example, as the boards in Minnesota. Here in Minnesota, as in many other states, the legislature has set up the standards for licensure in all the healing arts. They are reasonable standards which have stood up in the courts and are accepted by the people of the state. They bar no one from practice who is a citizen of the United States and who has the qualifications to meet those standards.

There is no discrimination, whatever, on any basis of race or creed or economic distinction. If there were, it would long since have been aired and corrected. Actually, the efficiency, fairness and devotion of the boards to the public interest, have never been questioned.

To abolish these boards in Minnesota, in favor of remote, national regulation would be comparable to the erasure of other regulatory units responsible to state and local governments. It would represent a surrender of important rights by the people, and one more long step in the encroachment of federal bureaucracy upon the functions of the states. Furthermore, standards for licensure would inevitably be levelled downwards toward a national average reflecting absence of modern licensure legislation in the backward states.

It may be that minor modifications, providing a type of national licensure for special classes of candidates, may be desirable at some future time. It seems clear, however, that nothing but harm can come from removing major responsibility from the states.

Uniformity on the Way

Furthermore, uniformity in standards of licensure is on the way to realization without federal legislation to force it on the states. State by state, and year by year, new legislation providing for uniform high standards is being written on the statute books. Minnesota's basic science and medical practice acts have long been regarded as models for such legislation and their provisions are being duplicated in a constantly increasing number of states. Protections of this caliber, built up by the states, themselves, and administered by locally responsible enforcement bodies, are firmly grounded in public acceptance and will eventually achieve the objectives sought by Dr. Gregg, without levelling downward the standards of medical practice and without violation of essential rights of the states.

SURVEY MAKES PROGRESS

Excellent progress is reported, to date, on the survey of medical services and facilities in the state, now under way under auspices of the Committee on Postwar Medical Services.

This committee was formed by the Council of the Minnesota State Medical Association, at the suggestion of President E. Mendelssohn Jones and approved by the House of Delegates.

The survey is the essential first step toward sound planning for the future in Minnesota. It is also indispensable to any effort directed toward aiding returning medical officers to establish themselves in practice after the war.

Minnesota Is First

Minnesota is reported to be the first state in the country to initiate such a study on a state-

wide basis. Other planning committees in the state, including the governor's committee headed by Mr. Ward Lucas of Winona, are interested in the study and have expressed themselves as willing to make use of results and accept the advice of the medical association in formulating their own plans. The effort is already proving its value in establishing the organization of physicians as the authoritative guiding body in plans for improvement in health services of the state.

The object of the study is two-fold. It embraces, on the one hand, a county-by-county assessment of medical and hospital needs of the state, and on the other hand, a questionnaire to all Minnesota physicians in the service as to their own plans for the future.

They Will Return to Private Practice

It is interesting to note, on the basis of a large number of returns already received in the State Office, that 98 per cent of the men now in service plan to return to private practice. This is decidedly at variance with early predictions that many would be enamored of the security offered by military and government service, and in view of the unsettled condition of the times, would elect to side-step the problems of private practice.

An almost equal percentage of men answering the questionnaire, express a desire for some type of refresher course or postgraduate training after the war. This nearly universal desire is of great significance to educational authorities of the state. It is obvious that extensive plans for short courses of all types, as well as for residencies and fellowships, must be instituted at once in justice to the men who have been absent from the routine of private practice, some of them for as many as four years in the service.

More Doctors, Hospitals, Needed

Returns from county medical advisory committees of the state, to whom the county studies were entrusted, show that an encouraging degree of care and impartiality has gone into recommendations made to meet future requirements in their counties. More hospital beds are obviously going to be required in many counties; also additional doctors above the number in practice there before the war. Most of the committees show themselves to be aware of the need for expanded organized public health services and heartily in favor of a program to provide such expansion.

The committee is gratified by first results of these efforts and confidently expects that the final picture of medical needs of the state, based upon the considered opinion of men in actual practice in every community, will be the most accurate and factual ever secured.

With such information at its disposal, the Minnesota State Medical Association will be in an excellent position to advise returning medical officers about opportunities for practice. It will also have a sound and unassailable basis on which to build a forward looking policy for the future in Minnesota.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. Du Bois, M.D., Secretary

Minneapolis Woman Pleads Guilty to Practicing Massage Without a License

Re: State of Minnesota vs. Gertrude Smith

On August 19, 1944, Gertrude Smith, forty-five years of age, entered a plea of guilty in the District Court of Hennepin County to an information charging her with the crime of practicing massage without a license. Following a statement of the facts to the Court, and upon the recommendation of the Minnesota State Board of Medical Examiners and the Hennepin County Attorney's office, Judge Vince A. Day imposed a sentence of one year in the Minneapolis Workhouse and stayed the sentence upon condition that the defendant refrain, in every manner, from engaging in the practice of massage.

The defendant, at the time of her arrest by Minneapolis Police Officers, was operating a bath and massage parlor at Suite 407, 608 Nicollet Avenue, Minneapolis. She stated to the Court that she formerly lived at Hayward, Wisconsin, and had learned massage from Mrs. Rena Nelson, a licensed masseuse, who formerly had a massage parlor at 609 S. 9th Street, Minneapolis. Mrs. Nelson retired in September, 1943, and the defendant states that she bought out the business and equipment for $200. She stated that her income averaged from $175 to $200 a month. Her massage parlor was closed by the police and it will remain closed.

It is an interesting fact that no wars of significance have ever been waged over medical problems. People have fought about every other problem imaginable. Wars over religion, over commerce, trade and industry, over boundaries, over races and sects, over royal and legal decrees, over social and economic questions, but never over medicine. In fact, medicine has been throughout the centuries one of the great unifying agencies to bring the peoples of the earth together.—David J. Davis, M.D., *Diplomate,* January, 1944.

Minnesota State Medical Association

Ninety-first Annual Session

April 12, 13, 14 and 15, 1944

Rochester, Minnesota

HOUSE OF DELEGATES

Assembly Room
Mayo Clinic
Wednesday, April 12, 1944

The first meeting was called to order at 2:00 p.m. by Speaker W. W. Will, who called on Dr. R. M. Kurten, president of the Wisconsin State Medical Society, Dr. L. R. Woodward, president of the Iowa State Medical Association and Dr. R. D. Bernard of Iowa, chairman of the Medical-Legal Committee of the Iowa Association while the Credentials Committee was deliberating.

Dr. Kurten: It is a pleasure to be invited to attend a session of the Minnesota State Medical Association. We, in Wisconsin, are always eager to know what you are doing because we know that you do things in a sound, progressive manner. We are going along in about the same fashion as you are, dealing with the amazing problems that are before us. To date, we have seen little light and we do not know where they are leading us; but we propose to remain calm and try to keep a hand on the things that are not entirely in the best interests of the public health and medicine.

We have embarked on one new project in Wisconsin which might be of interest to you. We are taking up farm and rural health problems as an important feature of our society's program. We are organizing our entire state with committees to reduce accidents and sickness in our rural population. We hope to do for rural health what our industrial committees have done for the cities.

We are looking forward with interest to the meeting of the American Medical Association this year, and we know we can depend upon Minnesota to make its usual contribution to the proceedings of the House of Delegates, in good common sense.

May I add just a word about the recent primaries in Wisconsin, in spite of the fact that your governor was one of the candidates. I don't know just what happened in Wisconsin, but whatever it was, it was decisive and only time will tell whether it was for the best.

Dr. Woodward: As president of the State Medical Society of Wisconsin, I have been doing considerable thinking, first on the matter of winning the war. Up to the present we have kept the two great military machines from getting everything they wanted. But these machines have been in existence for a hundred years or more, one in Germany and one in Japan. Their whole business is war. World War I and this war are just episodes in our effort to keep them from destroying us. In 1918 we permitted a stalemate. Japan was allowed to get the foothold which enabled her to sieze what she holds now. In another twenty years we shall have a much worse thing to contend with than we have now if we do not see that her military machine and the military machine of Germany are destroyed.

Second, as to postwar planning. In the second paragraph of Dr. Jones' message in your program he has expressed beautifully what I would like to say on postwar planning. Our big job, after we see to it that the military machines are destroyed, is to preserve our American way, not only for the medical brothers when they come back, but for all of the boys who are doing so much for us here at home. Our job is to give the people at home the best care we can give them. We cannot, in my opinion, let that care be a government-controlled proposition. The future of medical care in the United States must be worked out by the medical professions.

* * *

After Dr. Bernard had been introduced, the Speaker called for the report of the Credentials Committee.

Dr. F. J. Lexa of Lonsdale, chairman, reported that a quorum was present and, it being moved, seconded and carried that the report be accepted, and also that the minutes of the previous meeting be accepted as printed without further reading, the Speaker called for the report of the chairman of the Council, Dr. W. L. Burnap of Fergus Falls.

Dr. Burnap: The first meeting in connection with the 91st annual session was held at 9:00 a.m. today with all councilors present and Dr. R. M. Kurten as guest.

Resolutions regarding institutional care of feeble-minded patients from the McLeod and West Central Medical Societies were read, and Dr. J. C. McKinley, chairman of the Committee on Mental and Nervous Diseases, to whom the matter had been referred, reported that the last Legislature had appropriated funds for additional facilities for these patients but that, because of war emergency and priority difficulties, building had been unavoidably postponed. Dr. McKinley stated that the state association could do nothing about the matter at the present time. It was suggested that he inform the two societies of the situation.

Financial reports were accepted as presented and applications for affiliate membership for Dr. F. S. Warren of Washington, D. C., a member of the Rice County Medical Society, and Dr. Peter Kraft of Duluth, a member of the St. Louis County Medical Society, were approved. Also the request of Capt. Thomas G. Petrich for a subscription to Minnesota Medicine was presented and it was voted that he be permitted to subscribe at the regular rate.

The Council voted to approve the request of the Minnesota Safety Council for a contribution of $50 for the year 1944.

Correspondence from Dr. L. L. Merriman of Duluth concerning requests from inductees that their medical history data secured during examinations be sent to induction centers or local draft boards was referred to a committee appointed as follows by the Chair: Drs. E. M. Hammes, S. H. Baxter, and H. Z. Giffin. The committee was requested to report at a subsequent meeting.

The problem of medical, dental and hospital care for migratory workers, brought into Minnesota by the War Food Administration of the Department of Agriculture and under the immediate care of the Midwestern Agricultural Workers' Health Association, was presented by Dr. Lloyd Gaston of the War Food Administration. An estimated 4,000 to 5,000 workers will come to Minnesota this year, during a three- to five-month period, for work in the canneries and beet sugar industry. Recruitment of these workers is carried on in Mexico, Jamaica, Bahama and New Foundland. Dr. Gaston said his administration hopes to continue this year on the same basis as last and the Council voted to

do nothing that would interfere with the activities of the Midwestern Agricultural Workers' Health Association until the emergency is over or until their medical activities violate some of the principles of medical practice which require safeguarding.

A resolution from the Nebraska State Medical Association concerning the EMIC program was read but action was postponed until a later meeting.

A letter from Dr. C. B. Drake tendering his resignation as Editor of MINNESOTA MEDICINE was presented by Dr. Hammes. The Council voted not to accept Dr. Drake's resignation and increased his salary as editor of the journal. The meeting adjourned.

* * *

Dr. Burnap also took occasion, following his report, to praise the efficiency of the State Office and to compliment the executive secretary, Mr. R. R. Rosell and members of his staff and the attorney of the Association, Mr. F. Manley Brist, for their work. The Council, he said, feels that the Association is very fortunate in their conduct of its affairs.

He also called attention to the devotion and hard work of members of the Council, to the considerable amount of time given by them to the work of the Council and to the high standards of their deliberations.

It was moved, seconded and carried that Dr. Burnap's report and supplementary remarks be accepted.

* * *

Speaker Will then called for the report of the Reference Committee on Medical Education Reports, Dr. A. H. Sanford of Rochester, chairman. The following reports were considered.

COMMITTEE ON CANCER

Cancer education and control are progressing steadily in Minnesota. The Committee on Cancer, working closely with the Minnesota Society for the Control of Cancer, has expanded its program of public education, as well as education for physicians, by every modern teaching method at its disposal.

Notable in the developments of the past year has been the teaching unit for high schools and colleges, published by the society under sponsorship of the committee, which is being used in an increasing number of schools in this and in a number of other states. Lectures, exhibits and motion pictures have rounded out the public program.

The annual packet for physicians on a cancer subject was issued in April, as usual, this year and was prepared especially to aid the general practitioner in routine examinations for the detection especially of cancers of the skin, breast, and body orifices. This especial phase of cancer diagnosis was selected because rumors have reached the Committee on several occasions that physicians in general practice are not taking sufficient interest in the patient who presents himself for routine examination in response to educational appeals. It is extremely important that a complete check, including a routine check for cancer, be made on all patients who come for a physical examination. A brief outline of procedure which should be followed in these examinations is now under consideration by the Committee and may be supplied to every physician for his desk at an early date.

It is gratifying to note that members all over the state are becoming aware of the existence of the institution called Our Lady of Good Counsel Free Cancer Home, operated by an order of Catholic sisters at 2076 St. Anthony Avenue in Saint Paul. Care in this home is free to all needy cancer patients, regardless of creed or race, upon recommendation of a physician and the Committee is happy to commend the fine work in this institution for a neglected section of the needy.

The Committee is also pleased to call attention of the members to the substantial appropriation made by the state legislature last year for research in cancer at the University of Minnesota. This is the first time, as far as is known, that a state legislative body has appropriated special funds for cancer work and it is hoped that the appropriations will continue and that they will be expanded, as time goes on, by private donations. The work now being carried on at the University is showing definite progress and carries with it a real hope for eventual solution of some of the enigmas of malignancy.

M. W. ALBERTS, M.D., *Chairman*

COMMITTEE ON THE CONSERVATION OF HEARING

The planned activities of the Committee on the Conservation of Hearing during the year 1943 have been curtailed by conditions imposed by the War, such as the restricted use of the automobile and Federal priorities on technical equipment and materials needed to construct and operate the proposed portable educational exhibit for state and regional meetings of physicians, educators, parent-teacher and other groups.

Failure to secure enactment by the 1943 Legislature of a drafted bill to initiate a practical program for the discovery and care of hearing-deficient school children was due chiefly to a lack of awareness by the public and legislators of the importance of such a program. This failure has not discouraged its sponsors, but has proved a strong incentive for greater effort to create an insistent demand for adequate legislation by the 1945 Legislature.

The noticeable growth of public interest in physical fitness as our greatest national asset and a wider recognition of the importance of conserving the hearing as a feature of the school health program are a challenge to the medical profession and educators for more effective work in this field of preventive medicine.

To make such effort possible, the Committee recommends that it be continued and respectfully requests the renewal for the year 1944 of the unexpended $450.00 grant voted by the Council in 1943.

HORACE NEWHART, M.D., *Chairman*

COMMITTEE ON FIRST AID AND RED CROSS

On behalf of the Committee on First Aid and Red Cross, I wish to report that our activities for 1943 were largely limited to assisting the State Board of Health effect a change in a law previously passed which called for compulsory first-aid training for school bus drivers and the carrying of first-aid materials in all school buses. The intent of the law was good, but funds were not provided for putting it into effect. At a subsequent time, such an arrangement might be deemed worth while, but it would require careful planning in order to make it function properly.

This Committee stands ready to coöperate with any individual concerned for the purpose for which it is constituted.

There has been a considerable decrease in the interest in first-aid training in 1943 as compared to 1942.

JOHN S. LUNDY, M.D., *Chairman*

COMMITTEE ON HEART

No special inquiries or requests have been submitted for action to the Committee on Heart this year and it seemed to the Committee that nothing of sufficient importance had developed since the last annual meeting to require a conference in these busy times.

F. J. HIRSCHBOECK, M.D., *Chairman*

COMMITTEE ON HOSPITALS AND MEDICAL EDUCATION

Undergraduate Medical Education

The Medical School of the University of Minnesota has continued its program of accelerated medical teaching. Under this program the school operates on a cal-

endar year instead of the usual academic year of approximately nine months. With new classes admitted at nine-month intervals this program constitutes a material contribution toward the training of a large group of physicians for war service. In addition, the number of students per class has been increased by approximately ten per cent.

On July 1, 1943, medical students who had been on an inactive status in Army or Navy Reserve Corps were placed on active duty. All of these students are in uniform and under military jurisdiction. Freshman and sophomore Army Students are "housed and messed" in Pioneer Hall. Junior and senior Army students and all Navy students are given "commutation allowances" and permitted to live where they choose. The Army has contracted with the University for 55 per cent and the Navy for 25 per cent of the places in the future medical classes.

A considerable number of the teaching staff of the Medical School are in Army or Navy service. Others are serving in advisory or consultant capacities to the Army, Navy, or other war agencies. Still others are carrying, in addition to their teaching duties, major responsibilities for the conduct of government-sponsored war research projects.

Graduate and Postgraduate Training

Graduate training of physicians in various specialties of medicine has been greatly curtailed as a result of the needs of the armed forces for young physicians. Only women and men who are ineligible for commissions in the armed forces are permitted more than twenty-seven months hospital service after graduation from medical school.

Postgraduate courses for medical officers of the Army and Navy have been conducted during the year by the Mayo Foundation and the Medical School of the University of Minnesota. At the Mayo Foundation, approximately 150 officers have been continuously in attendance at these courses throughout the year. At the Medical School two three-month courses were conducted with approximately forty medical officers in attendance.

Postgraduate courses for civilian physicians have been continued by the Department of Postgraduate Medical Education of the University. The number of these courses has been less than during recent years but the attendance of physicians has been surprisingly good.

Hospital Service

The hospitals of the state have maintained normal standards of service in spite of the difficulties in maintaining them. Patient loads have increased, while professional and service staffs have decreased.

Approximately 900 practicing physicians have entered the armed forces from the state of Minnesota. Most of these were on the visiting staffs of hospitals. Intern and resident staffs have been reduced to approximately two-thirds of pre-war levels, in accordance with the "9-9-9" program and the hospital quotas of the Procurement and Assignment Service. As part of this program, hospital internships and residencies are reduced to a nine-month basis. However, one-third of the interns who hold commissions in the armed forces—and this presumably includes all who are physically qualified for military service—may be deferred for a second nine months to serve as assistant residents in hospitals and one-half of these may be deferred for a third nine months to serve as senior residents in civilian hospitals. The quota system provides for a distribution of interns and residents to hospitals on approximately the same proportionate basis as existed in 1940.

The recruitment of nurses by the armed forces has resulted in acute shortages in many civilian hospitals. The recently established Cadet Nursing Program, however, in which twenty-three hospitals in Minnesota are participating, should provide considerable assistance in this regard for the future.

Competition on the part of war industry has made it exceedingly difficult for hospitals to maintain adequate and competent service staffs. During the month of January the University Hospital experienced a strike of its service employes. This strike resulted in a serious disruption of vital hospital services. Fortunately, as a result of public opinion, the strike lasted only forty-eight hours. It is almost inconceivable that any group would strike against a charitable institution which is providing medical care for the helpless sick of the state.

HAROLD S. DIEHL, M.D., *Chairman*

COMMITTEE ON PUBLIC HEALTH NURSING

Your Committee on Public Health Nursing has had no meeting or correspondence during the past year.

The Chairman takes the liberty to suggest that your body adopt and endorse in toto the "Standing Orders for Nurses in Industry" prepared by the Council on Industrial Health of the American Medical Association. The manual is entirely applicable to industrial health nursing in the State of Minnesota.

C. A. SCHERER, M.D., *Chairman*

COMMITTEE ON SYPHILIS AND SOCIAL DISEASES

Minnesota's program for the control of venereal disease has continued to operate smoothly and effectively and no special problems have been submitted for action by the Committee on Syphilis and Social Diseases this year.

Military problems, also new developments in treatment, have stimulated an unusual amount of interest in venereal disease problems among general practitioners. This interest was evident in the response to courses arranged for the Wartime Graduate Medical Meetings held at Fort Snelling and Wold-Chamberlain Naval Air Station Dispensary this year and in requests for the packet on syphilis issued in February in connection with the Subject-of-the-Month program, by the Minnesota State Medical Association.

P. A. O'LEARY, M.D., *Chairman*

COMMITTEE ON VACCINATION AND IMMUNIZATION

The Committee on Vaccination and Immunization has two recommendations to make. The first, that a short article should be published in MINNESOTA MEDICINE from the Committee on Vaccination and Immunization detailing not only which diseases should be vaccinated against but also the optimum ages, details of technique, and the severity of reactions. Secondly, the Committee recommends that the Minnesota State Medical Association issue a small leaflet to the mother of each newborn baby in the State within ten days of its birth telling her about the value of immunizations, informing her at approximately what age they should be done, and advising her to get in touch with her family physician.

The Committee on Vaccination and Immunization would appreciate some positive action on these recommendations.

E. J. HUENEKENS, M.D., *Chairman*

COMMITTEE ON TUBERCULOSIS

Tuberculosis Committees Recommended

The Committee recommended that each county or district medical society appoint a committee on tuberculosis through which the State Committee can work in arranging for county-wide tuberculosis control programs and other activities pertaining to this disease. This recommendation was approved by the Council. When these committees are appointed it is planned to send

each chairman minutes of the regular meetings of the State Committee. *The House of Delegates can help us immensely by giving special support to the formation of these committees.*

Examinations for Tuberculosis in General Hospitals

Last year the Committee recommended that a campaign for examinations for elimination of tuberculosis be instituted for all patients entering general hospitals throughout the state. This examination is to consist of (1) tuberculin test, (2) x-ray film inspection of the chests of all reactors, and (3) complete examinations of those with shadows to determine the etiology of the disease. It was recommended that this procedure be extended to all members of hospital personnel preceding employment and periodically thereafter.

Dr. K. H. Pfuetze of Cannon Falls, chairman of the subcommittee on this subject, is arranging for speakers to present the subject before the annual meeting of the State Hospital Association. It is the hope of the Committee that during the coming years speakers can be provided for hospital staff meetings in various parts of the state.

Tuberculosis in Institutions for the Mentally Ill

The state institutions for the mentally ill have continued to attract widespread attention from the standpoint of tuberculosis control. They literally had become cesspools for this disease. Dr. H. A. Burns, who is devoting his entire time to this work, is solving the problem as fast as possible. Slightly less than one-fifth of the deaths from tuberculosis in some parts of Minnesota occur in institutions for the mentally ill.

Incorrigible Tuberculous Patients

The Committee has not relaxed its stand for a satisfactory place to isolate incorrigible cases of contagious tuberculosis. The members believe this must be one of the early projects next year in order to protect the public against such individuals.

County-wide Tuberculosis Control Projects

Meeker County.—The physicians in Meeker County, although handicapped by the absence of some of their members in military service and by gasoline rationing, have continued their county-wide tuberculosis control project. Doctor Danielson has stated that, of the approximately 17,000 citizens, between 9,000 and 10,000 have already been tested with tuberculin; that 22 per cent reacted and 18 active cases of pulmonary tuberculosis previously undetected were discovered. Miss Dempsey, of the National Tuberculosis Association, is now at work analyzing the data. From this, she hopes to establish some important, practical facts concerning tuberculosis control.

McLeod County.—On October 1, Dr. C. G. Sheppard, of Hutchinson, Minnesota, stated to the Committee that the McLeod County Medical Society wished to start a county-wide tuberculosis control project similar to that of Meeker County. Members of this Society already had a sum of approximately $1800 in their treasury which they were willing to use in this work.

On October 20, several members of the Committee attended a meeting of the McLeod County Society in Hutchinson, and it was unanimously agreed that the project should be started as soon as possible. Later, a committee of the McLeod County Society went before the County Commissioners. The Commissioners voted to grant the Society an annual sum (any amount necessary) to carry out this program. As far as we know, this is *the first time in the history of Minnesota that county commissioners have voted financial support for a county-wide tuberculosis eradication campaign among human beings.*

Wright County.—On October 28, Dr. C. L. Roholt, of Waverly, Minnesota, stated to the Committee that the physicians of Wright County were interested in a similar county-wide tuberculosis eradication campaign. On February 17, three Committee members attended a Wright County society meeting, and the members voted unanimously to institute the program. A committee of the Society was appointed to develop the program.

Other Counties.—Physicians in several other counties have expressed their desire to imitate county-wide projects. The Committee has reason to believe that this movement will rapidly gain momentum and that a statewide tuberculosis control program by the medical profession will soon be realized.

Accreditation of Counties

Last year the Committee reported that *Lincoln, Olmsted, Murray,* and *Stevens* Counties had been accredited according to the following qualifications: (1) the mortality rate was 10, or less, per 100,000 population during the past five years; (2) at least 80 per cent of the senior students in high school were tested with tuberculin, and not more than 15 per cent reacted. The certificates were issued by the State Medical Association, the State Department of Health, and were signed by the Governor of the State.

During 1943, four more counties were accredited, *Nobles, Pipestone, Rock* and *Waseca* Counties. Two more counties, *Martin* and *Jackson,* have qualified for accreditation, and plans are being made for the ceremonies in the near future.

Full-Time Physician Neded

It has been suggested, also, that a full-time physician be employed to assist and work under the direction of the members of the medical societies which adopt county-wide programs. It is particularly important that this be done because so many physicians are in military service, and those remaining in practice are at times overwhelmed with routine work. We believe that for the next few years there will be enough of this kind of work to justify employment of a full-time physician, and that funds probably can be made available for this purpose.

Support of Governor Thye

Governor Thye has manifested a great deal of interest in the work of this Committee; in fact, he made considerable sacrifice in order to present the main address at the accreditation ceremonies for Nobles, Pipestone and Rock Counties. He has expressed his willingness to support the Committee in every possible way and has accepted our invitation to attend one of the regular Committee meetings.

J. A. Myers, M.D., *Chairman*

* * *

Dr. Sanford moved that all of the reports be accepted with the following comment and special recommendations:

In connection with presentation of the report of the Committee on Cancer he called attention to a cancer meeting for men held under auspices of the Hennepin County Medical Society which was attended by 150 laymen.

He called attention also to the bill for conservation of hearing procedures to be introduced under auspices of the Committee on Conservation of Hearing in the next Legislature and recommended that it receive the backing and approval of the entire association. He recommended careful reading of the reports of the Committee on Hospitals and Medical Education and of the Committee on Tuberculosis because of their completeness and the activities described and called attention to the suggestion in the report of the Committee on Vac-

cination and Immunization that a leaflet on immunization and vaccination be issued for distribution to mothers of newborn babies before they leave the hospitals.

Dr. L. F. Richdorf, Minneapolis, reported that the chairman, Dr. E. J. Huenekens, who was not present, was very anxious that something of the sort be done in order that information should be placed in the hands of every mother. He was sure, he said, that whatever method is adopted to that end would have the hearty approval of all members.

Dr. Burnap suggested that the State Association might coöperate with another agency to publish such a pamphlet.

Speaker Will: Mr. Rosell has suggested the State Board of Health as the coöperating agency. Dr. Chesley, he thinks, would be glad to help in the matter and the Board would probably furnish the pamphlets. The medical profession is open to criticism that it has not made a special effort to make sure of vaccination and immunization of babies; that it has, instead; put its emphasis upon protection of school children while the time for such protection is when the children are babies. We would like to hear from Dr. R. W. Morse as a member of the State Board of Health.

Dr. Morse: We have taken this matter under consideration at Board meetings and I am sure the State Board of Health will go ahead with this undertaking if it has the advice and approval of the state medical association.

Dr. Sanford said he believed the delegates, in accepting the report, could leave the matter of publication of the pamphlet to the Council to proceed as it may see fit.

It was moved, seconded and carried that the report be accepted with that understanding.

Speaker Will then called upon Dr. Horace Newhart, chairman of the Committee on Conservation of Hearing.

Dr. Newhart: I appreciate the privilege of saying a few words to dispel some possible gloom that may have pervaded the report of the Committee on Conservation of Hearing, regarding legislation and some other matters. A better understanding regarding the problem of conservation of hearing exists, at the present time, than at any other period in the world's history. Many more people are interested in this neglected field than ever before. The American Medical Association has recently made a fine effort to help educate medical people and laymen in the importance and accomplishments in hearing conservation. The Council on Physical Therapy has studied audiometers and hearing aids with rather astouding results in raising manufacturing and distribution standards. Great inspiration has also come through the work of the American Academy of Ophthalmology and Otolaryngology which has made a generous contribution and appropriation for carrying on the work of education. The Academy has prepared an excellent outline of a program for rehabilitation of the hearing-deficient and has coöperated in production of the film called "The Right to Hear" which will be shown in the course of this meeting and which I wish all of you might see. It is suitable for showing to lay groups of all kinds and has been used many times since its production last year.

Another point which should cheer us all is the interest now being taken by the Federal government in the rehabilitation of men returning from combat duty and of those in war industries whose hearing is damaged and of civilians generally. It was my privilege to attend a meeting, a few days ago, in the newly constituted advisory group to the administration of the Barden-LaFollette rehabilitation act. This group is helping to formulate an ideal program which can be adopted with modification by the states. In this program the group is deeply concerned with the welfare of the hearing-afflicted. At the same time, I may say they have a deep regard for the taxpayer. We believe this program will result in great improvements; but it will be necessary for us medical men to aid it in every way possible and especially to give our attention to the matter of salvaging hearing. First, we must improve the morale of the disabled and especially of the hearing-deficient. Second, we must put them in a position to earn a living and secure their self-respect.

Insofar as the bill which failed to pass at the last Legislature is concerned, we understand, now, why it did not pass; the people were not ready for it. Also it was introduced late in the session and we were not successful in getting sufficient influence to back our legislators. I hope we can introduce a similar bill early in the next session and that all of us will then consider ourselves a committee of one to help stir up legislative interest.

* * *

Speaker Will then called for the report of the Reference Committee on Miscellaneous Scientific Reports, Dr. C. A. McKinlay, chairman. The following reports were considered:

HISTORICAL COMMITTEE

Commencing with Volume 21, 1938, twenty articles, supplied through the Historical Committee, have been published in Minnesota Medicine. These articles occupy approximately 452 pages of printed material in Minnesota Medicine.

There is now on file with the Bruce Publishing Company, *Pioneer Physicians of Faribault County* by Dr. Roscoe Hunt. Also, previous to 1938, a number of articles have been published which could well be included in the medical pioneer history. Likewise, some articles which have been published since 1938 and which have not passed through the Historical Committee, are of historical significance and might well be included.

At the opening of 1943 there were on hand such articles as were reported a year ago and during 1943 there have become available, *Reminiscences of Dr. E. J. Brown,* copied in long hand from old newspapers by Dr. John Armstrong.

In addition, as of February, 1944, two articles, *Notes on the History of Medicine in Houston County Prior to 1900* and *Notes on the History of Medicine in Fillmore County Prior to 1900,* are completed and ready for publication. The compilation of an article on the history of medicine in Olmsted County before the turn of the century is in progress.

Some of the unpublished material on file can be used with relatively minor editing. Much of it would be more useful and suitable if it were expanded and revised editorially. Some of it requires amplification. It is hoped that the state secretary's office force will be able to lend assistance in making ready for publication a number of articles now on file.

Some communities are fortunate in having members who have shown particular aptitude in compiling histories of pioneer physicians. The job requires persistence as well as ability and during this war period there are probably few who feel inclined to take on additional burdens. The Association is grateful to such men as Drs. John M. Armstrong, Arthur S. Hamilton, Richard Bardon, Charles E. Bigelow and Mr. James Eckman and many others. Through the foresight of Dr. William J. Mayo the services of Mrs. Nora Guthrey became available to your committee. During the past two years she has compiled excellent histories about Houston County and about Fillmore County. As has been said, these are ready for publication and the same author is now proceeding with the history of Olmsted County.

Your committee believes that in consideration of the changes brought about by the national emergency, the

work on the history is progressing satisfactorily and recommends:

1. That all members of the Association coöperate with the committee in attempting to maintain active interest in the undertaking throughout the state.

2. That collection and preparation of data continue as steadily as possible in anticipation of the time when the final correlation of material and publication of the book, "The Pioneer Medical History of Minnesota," can be accomplished.

M. C. Piper, M.D., *Chairman*

COMMITTEE ON MEDICAL TESTIMONY

The Medical Testimony Committee held only one meeting during the past year. No special cases came up for consideration. It is very gratifying, indeed, that not a single complaint was made to the Committee regarding expert medical testimony given by the members of the State Medical Association from June 1 to December 1. Since that time, an attorney and two physicians discussed with your chairman, the medical expert testimony given by our members in three different cases. The complaints were not made in writing, and the testimony did not appear to be of such questionable character that further investigation seemed necessary.

In the February, 1944, issue of Minnesota Medicine, page 145, Dr. Julian F. DuBois, Secretary of the Minnesota State Board of Medical Examiners, gave a brief, interesting report of the work of our Committee under the title of "A Friendly Admonition Concerning Medical Testimony." It is well worth reading.

E. M. Hammes, M.D., *Chairman*

COMMITTEE ON NERVOUS AND MENTAL DISEASES

The Committee on Nervous and Mental Diseases was created in 1943. Three meetings were held. The Committee decided to focus its attention on state hospital problems, to interest itself in good medical procedures therein, and to develop influences toward improving the state hospitals.

Mr. Carl H. Swanson, Director of the Division of Public Institutions, and Mr. Frank R. Chailquist, Assistant Commissioner of Administration, attended one meeting of the Committee. These gentlemen informed the Committee of the advantages and disadvantages of the encumbrance system of bookkeeping controlling the state hospitals' budgets since the Reorganization Act of 1939. Briefly, the advantages are the savings it effects and the disadvantages are the difficulties experienced in obtaining hospital supplies.

The Director of the Division of Public Institutions outlined his program for state hospitals as follows:

1. All state hospitals to be receiving hospitals. Enabling legislation will be requested of the 1945 State Legislature.

2. The state will then be districted so that patients will be sent to the hospitals in closest proximity to their counties of settlement.

3. As a postwar medical program. (a) Replace or modernize various hospital buildings; (b) Increase medical staffs; (c) Increase nursing personnel, i.e., graduate nurses and attendants, by employing a greater number of the former; (d) Establish outpatient clinics at each state hospital; (e) Expand extramural care of patients.

The Committee endorsed this program for state hospitals and recommends to the Association that when these matters become more imminent, the proposals be restudied in detail with the purpose of specifically lending support for them by the medical profession. The Committee inquired into the possibility of greater facilities for the care of the feeble-minded. The 1941 State Legislature appropriated funds for a 500-bed addition to the Minnesota School for the Feeble-minded at Faribault. Priorities prevented construction but federal approval is anticipated. These buildings will house all feeble-minded patients now committeed who are most urgently in need of institutionalization. Further facilities are not in order for the present. No action on the McLeod County Medical Society resolution seems necessary at this time, therefore.

J. C. McKinley, M.D., *Chairman*

COMMITTEE ON INDUSTRIAL HEALTH

The increasing interest in industrial health as a specialty of medicine and as a factor in the public health program of the state has been a source of encouragement to the committee this year.

A questionnaire sent to all physicians of the state this year showed that a considerable number are willing to participate in industrial health work on a part-time or consultant basis and even more would be interested in a short course on the subject at the Center for Continuation Study on the University campus.

A total of 343 responded to the questionnaire. Of these, 8 indicated that they are now in full-time industrial service; 18 that they are now serving as consultants in industrial health; 84 that they are on part-time service; 47 that they are on call. A total of 6 who are not now in industrial health service said they would like to serve full time: 33 are willing to serve as consultants; 148 are willing to serve part time; 26 are willing to be on call. One hundred and forty declared that they would attend a course on industrial medicine at the University.

The complete list of names secured through this questionnaire is now on file at the State Office and will be made available, by the order of the Council, to any employers seeking the aid of physicians to establish or extend plant medical services in their areas.

The Committee will work with Dr. L. W. Foker, Director of the Division of Industrial Hygiene and the University authorities, to arrange a course on industrial health at the University as soon as possible.

Several appeals have been made to the membership on various occasions to send occupational disease reports to the Division of Industrial Health. Many physicians are failing to do so, however, and the Committee, accordingly, wishes to make a special request of the delegates to see that members of their respective societies understand the purpose and importance of these reports. Many apparently do not know that a report is required by law within 24 hours whenever a case of occupational disease is diagnosed. The law provides, also, that these reports shall be used only for purposes of study and that they cannot be used in any litigation which may ensue. They are absolutely essential, however, as a basis for studies of the Division looking to better health conditions in industries of the state.

Careful study of the new Occupational Disease law passed by the last legislature has developed the fact that a large number of x-ray examinations will be required in certain industries. In some instances pre-employment x-ray examinations are indicated for every worker, to be followed by periodic examinations during future employment. A subcommittee appointed to investigate the matter of fees to be charged for these x-rays made the following recommendation: If the number of x-rays required in any given plant or industry is large, a fee of not more than $5.00 should be charged for each x-ray.

In accordance with the report of this subcommittee and because higher fees have led, in other states, to the practice of installing plant x-ray equipment and sending films elsewhere for interpretation, the Committee unanimously voted to recommend that the House of Delegates at this session adopt a maximum fee of $5.00 for mass x-ray examinations made under the Occupational Disease law of the State.

A. E. Wilcox, M.D., *Chairman*

COMMITTEE ON INTERPROFESSIONAL RELATIONS

Nursing Problems

1. *Nursing Care for Civilians.*—Further report on efforts to provide more adequate nursing care for civilians. The report of the Committee on Interprofessional Relations presented to the House of Delegates in May, 1943, set forth the nursing problems as they refer to civilians and the methods which are being undertaken to solve these problems. We wish to report here the further progress made in this direction:

(a) Paid auxiliary workers or non-professional nurses—

The Advisory Council on Rural Nursing Service which is composed of two members of the State Board of Examiners of Nurses, the Minnesota Nurses Association, the Minnesota Hospital Association and the Minnesota State Medical Association, worked out a full program for the training of auxiliary workers or non-professional nurses. Requirements for admission to training, the curriculum, and a list of duties which such workers were to be allowed to perform upon satisfactory completion of the curriculum, were set forth. A questionnaire was sent out to all hospitals of twenty-five beds or more which did not have courses of training for nurses leading to eligibility for registration, for an expression of their interest in the plan for training auxiliary workers. Sixteen hospitals reported favorably to the questionnaire and wished further assistance; eight hospitals advised that they were not interested at the present time; and five hospitals, while interested in the program, were unable to carry it out at the time.

In order to carry on this program, the Advisory Council believed that it would be necessary to have full-time supervision of the project. A budget was prepared of the estimated yearly expenses which amounted to approximately $5,000. The Minnesota Nurses Association agreed to supply services equal in value to $1,000 per year. The remaining $4,000 was to be supplied by the Minnesota Hospital Association and the Minnesota State Medical Association. It was hoped that after the program was set in motion it would become largely self-supporting, if not entirely so, from fees paid for the licensing of the workers. The budget was presented to the Council of the Minnesota State Medical Association for their reaction. Because of the fact that in the rural counties the hospital staffs and the medical men were extremely overworked, it was felt that they would not be able to spend the time required to teach auxiliary workers. Some of the hospitals were receiving federal allotments for training nurses' aides and it was pointed out that the State Emergency Council had funds for such purpose also. Members of the Council also stated that some of the counties were getting along satisfactorily with their present personnel and did not wish to initiate the program. It was moved that the Council express its appreciation for the work that had been done by the Interprofessional Committee and for their helpful suggestions; but that on account of present unsettled conditions, and the fact that the matter requires further study, the Council should go on record as favoring the plan, but should defer definite action. The Minnesota Hospital Association, upon learning of the action of the Council, took a similar stand. Consequently, the entire program is at a standstill because, without funds, the Advisory Council on Rural Nursing Service is not able to proceed further with this portion of its program.

(b) Professional or Registered Nurse—

The second problem which the Advisory Council on Rural Nursing Service considered was that of a long range program for training in rural hospitals nurses eligible for registration. Because it is impossible at the present time to secure adequate facilities and an adequate number of competent, trained instructors for opening new schools for training such nurses, action on this problem has been deferred for an indefinite period of time.

(c) The Nursing Problem in State Institutions—

We have been informed by Mr. Carl H. Swanson, Director of the Division of Public Institutions of the State of Minnesota, that the problem of the shortage of nurses in our state institutions will be largely met by the use of senior and junior cadet nurses. It is our understanding that the effective date of this program is April 1, 1944.

2. *Proposed Revision of the Nurse Practice Act.*—The Minnesota Nurses Association firmly believes that the present Nurse Practice Act of the State of Minnesota should be revised in the interests of the welfare of the general public. It is the plan of that Association to present a bill to the next Legislature providing for the revision of that Act. The bill would require the licensing of all who nurse for hire and the annual registration of all nurses, both registered or professional, and non-professional. The effective date of the law would be one year after the end of the present World War. In preparing this bill in its final form and in presenting it to the Legislature, the Minnesota Nurses Association would appreciate the interest and support of the physicians of the state.

The bill provides a reasonable waiver for those already engaged in the practice of nursing on the non-professional level. It also provides for a course of training for non-professional workers of nine to twelve months' duration which course of training closely resembles that proposed by the Advisory Council on Rural Nursing Service for the education of auxiliary workers or non-professional nurses.

The bill in the form in which it will be presented to the Legislature, is not as yet available for study, but it is the understanding of the Committee on Interprofessional Relations that the Committee will have ample opportunity to study it prior to the meeting of the Legislature.

Problems Involving Pharmacy and Medicine

The Committee has discussed with representatives of the Committee on Interprofessional Relations of the Minnesota State Pharmaceutical Association and Charles Rogers, Dean of the College of Pharmacy of the University of Minnesota, certain problems bearing on relations between pharmacists and physicians and surgeons. The problem of the dispensing physician and the counter-prescribing pharmacist received considerable attention. Out of the discussions with the pharmacists, grew a suggestion for the formation of a steering committee for interprofessional relations as outlined below.

Proposed Steering Committee for Interprofessional Relations of Medicine, Dentistry, Pharmacy, Nursing and Hospitals

Representatives of the Minnesota State Pharmaceutical Association suggested that the Chairman of the Interprofessional Relations Committee of the State Medical Association call a joint meeting of that committee and similar committees of the Minnesota State Dental Association, Minnesota State Pharmaceutical Association, Minnesota Nurses Association, and Minnesota Hospital Association for the purpose of forming a steering committee for all interprofessional relations of the groups specified. It was felt that every effort should be exerted to provide the best possible health service to the general public if the professions and hospitals are to continue to function with a minimum of governmental assistance and control. Such a steering committee would aid in making possible a concerted joint effort. Each of the groups represented would then be thoroughly informed of the activities of the others and a general program for all outlined and guided. It was felt that it would be important to stimulate better

interprofessional relations on the county and district levels.

Recommendations

1. We recommend, if the final bill for the proposed revision of the Nurse Practice Act appears to be a measure which will provide more adequate nursing care for the general public, that it be supported by the Minnesota State Medical Association and that it be opposed if it appears otherwise.

2. We recommend that the Chairman of the Interprofessional Relations Committee of the Minnesota State Medical Association call a joint meeting of this committee and similar committees of the Minnesota State Dental Association, Minnesota State Pharmaceutical Association, Minnesota Nurses Association, and Minnesota Hospital Association for the purpose of forming a steering committee for all interprofessional relations of the groups, special emphasis of the committee to be placed on initiating, promoting and guiding activities of that nature on county and district levels.

W. P. Gardner, M.D., *Chairman*

COMMITTEE ON DIABETES

The Committee on Diabetes has been called upon by government agencies several times during the past year for assistance in drawing up requirements for rationed food in special diets.

The greatest problem has been to determine the average supplementary rations for diabetic needs. These consist mostly of meats, fats and processed food. An adequate amount must be made available but a surplus is wasteful. It has been called to our attention that some patients have received rationed foods in amounts far above their needs. The committee has done what it could to aid in stopping this practice. Rationing of supplementary foods is better understood by both patients and doctors at the present time, however, and we anticipate less trouble during the coming year.

Another problem now under consideration by the committee involves better and more general instruction of diabetic patients in testing their own urine for sugar each day. The committee feels that this simple procedure is one of the most important and most neglected phases in the treatment of diabetes, and a greater effort is needed on the part of the doctors of the state to teach their patients this procedure.

J. R. Meade, M.D., *Chairman*

COMMITTEE ON FRACTURES

The Committee on Fractures met recently to consider the fee schedule requested by the Children's Bureau for care of intercurrent illnesses or accidents to wives of enlisted personnel of the armed forces in connection with the EMIC program. Another meeting of the committee will be held at the time of the state meeting at which time recommendations with regard to adoption of such a schedule will be drawn up for action by the House of Delegates.

The State Committee on Fractures is the central body, organized to work closely with county fracture committees throughout the state in an educational program to the physicians and the public on proper handling of fractures. This program has not been pushed actively this year because of wartime shortages; but it is our opinion that the structure and objectives should be maintained and a renewed effort made to carry on work of the committee as soon as conditions permit.

V. P. Hauser, M.D., *Chairman*

COMMITTEE ON CHILD HEALTH

The last meeting of the Committee on Child Health was held in Minneaoplis at the time of the meeting of the State Medical Association. The only subject on the agenda of that meeting that was not disposed of was a consideration of the advisability of making rheumatic fever a reportable disease in the state of Minnesota. It was the sense of the members that this be given further study.

No urgent matters have been submitted to the Committee for consideration. There are, however, several matters which will constitute the agenda for the breakfast meeting scheduled for 7:30 a.m. on April 14 during the 1944 session of the State Association.

R. L. J. Kennedy, M.D., *Chairman*

COMMITTEE ON OPHTHALMOLOGY

Since the report of the Survey of Visual Health of the School Children in Rural Hennepin County made last year, a follow-up system was carried out by the Hennepin County Public Health Nurses. This Survey originally was conducted by the Minnesota Society for the Prevention of Blindness, and the Minnesota State Medical Association, with the coöperation of the Minnesota Academy of Ophthalmology and Otolaryngology, the Hennepin County Medical Society and the Public Health Nursing Agencies.

The follow-up program was carried on in the Hopkins, Harley-Hopkins and Glen Lake districts. Of 371 children contacted, 229 had been advised to have follow-up medical care. Of these, 143 had received care, forty-five had not received the care which had been advised, and forty-one could not be contacted because they had moved elsewhere. Of the forty-five who did not have attention, thirty-four had 20/20 vision and no apparent difficulties as ascertained by the nurse, and only eleven still had less than 20/20 vision.

This visual survey represented a great deal of work, was very well planned and carried out; resulted in the accumulation of much valuable data and presents a workable plan for future surveys. This survey resulted in specialized eye care being given to all but a very small percentage of children with defective vision in rural Hennepin County.

The Committee on Ophthalmology has consistently urged that such conditions as glaucoma and refractive errors of children, especially those with strabismus, be repeatedly brought to the attention of the general practitioner, by means of talks, packets and other literature, in order that he may aid in their early detection and treatment.

T. R. Fritsche, M.D., *Chairman*

COMMITTEE ON MATERNAL HEALTH

At the 1943 meeting of the Committee on Maternal Health, a request from the Planned Parenthood Federation of America to recommend a resolution approving child spacing service by private physicians and public health services was discussed and the following motion was made by Dr. Litzenberg, seconded by Dr. Kucera and unanimously passed:

The Committee on Maternal Health recommends that the House of Delegates pass a resolution concurring in the action of the American Medical Association concerning the problems of contraception, stated as follows:

The American Medical Association has recommended that the legality of the use of contraceptives be made clear to physicians; that the Association undertake investigation of contraceptive devices and methods; that medical students be instructed in the problems of human fertility; and that the dissemination of contraceptive advice be under medical control.

The Maternal Mortality Study is being continued by a subcommittee of the Maternal Health Committee. The general summary has been completed, as well as several other papers dealing with groups of specific complications responsible for maternal deaths. These papers will be published in Minnesota Medicine. The

reprints will be made up in booklet form when the entire series of papers has been completed.

The Committee is studying ways and means of best using this material for educational purposes, particularly at meetings of the County Medical Societies.

The Committee wishes to express its appreciation to Doctors A. J. Chesley and Viktor O. Wilson of the Minnesota Department of Health for their assistance in making this study possible.

RUSSELL J. MOE, M.D., *Chairman*

COMMITTEE ON MILITARY AFFAIRS

There is nothing to report in the way of new activity by the committee this year. The members continue to be active in the Selective Service System and have been receiving "Certificates of Appreciation" from the President and signed by the State Governor.

J. J. CATLIN, M.D., *Chairman*

* * *

DR. MCKINLAY: The report of the Historical Committee is commended for its thoroughness. Completion of the book "Pioneer Medical History of Minnesota" is awaited with great anticipation by all members of the profession. It is imperative that the medical profession help the committee at every opportunity to make the record complete.

It was moved and seconded that the report be accepted and Speaker Will called upon Dr. M. C. Piper, chairman of the committee.

DR. PIPER: The problem of our committee grows larger as the work goes on. If we were to publish the papers we now have on hand in one volume we might have a book of four or five hundred pages; but it would, in the end be just a bound volume of reports. It seems to me it would be better to postpone publication until we had material for two or three volumes and that an editor, at some future time, should take the material and arrange and amplify it so that it would be a reference book of value to generations in the future. We hope in the meantime that everybody will continue their interest and help us carry on our work.

The motion to accept the report was unanimously carried.

Dr. McKinlay then moved that the report of the Committee on Medical Testimony be accepted and its work commended, and Speaker Will called on the chairman, Dr. E. M. Hammes.

DR. HAMMES: The committee still wants every member of the Society to keep an eye on the few practitioners who need guidance in the matter of medical testimony. It is rather a disagreeable job for the committee to do this work; but it is willing to do everything possible to raise the standard of medical testimony in this state to its highest possible level.

The motion was seconded and carried.

DR. MCKINLAY: The report of the Committee on Nervous and Mental Diseases is commended as outstanding. The emphasis might be placed on the part the practicing physicians must play in the recognition of cases that may be of danger to the community. The limited facilities of the School for Feeble-minded at Faribault are known, and their correction by the contemplated addition is recognized. It is considered that this addition will take care of the acute cases that urgently need hospitalization.

Speaker Will called on Dr. J. C. McKinley, chairman.

DR. MCKINLEY: I would like to put a question to you. Our activities to date, have all been concerned with palliative measures that seem to be indicated here in the state, in the handling of psychiatric problems. Personally, I think that is a good place to start, but a poor place to stop. When you consider that only four or five years ago we had around 25,000 beds for psychiatric cases, whereas now the number has run over 600,000. I think you will realize we are dealing with one of the major problems of society.

At our committee meeting this morning, Dr. Hammes brought up the question of the possibility of legislation looking toward control of psychopathic criminals, those individuals who are sometimes called moral imbeciles, who are relatively uneducated, who can't look ahead and who bother society by their criminality or near-criminality. They are a problem in our own state. About 700 of them have been studied by technicians here. We estimate that there are about six million of them in the United States who are ambulatory and out in society. To these you would have to add the borderline psychiatrics, the paranoic individuals who have not been in enough trouble to be institutionalized. All in all, these people constitute an enormous problem; and it seems to me that, as a Committee on Nervous and Mental Diseases, we ought to have the courage to investigate and report, specifically, on measures to control and meet this problem, which is such a worry to the psychiatrist, in relation to the social system. Unquestionably such an investigation will bring up many controversial issues. The church will be interested. The legal profession will be interested in the matter of franchise and control of these people; and I believe, personally, that we ought to make some effort to solve it. It is too hot a potato for the Committee, however, unless we have some directive to start the ball rolling. We shall keep our reports in confidence, of course, bringing them back, only, to the state society and possibly, later, with the society's approval, enlisting the interest of sociologists, criminologists and the legal profession to see if there is some practical basic answer. Ultimately, I think, if we accept our responsibilities as we should, we must go ahead on these basic problems. I would like the reaction of the House of Delegates on this matter.

DR. HAMMES: This problem is so large that it enters into every field of medicine. Except for sex delinquents, there is no legislation now that enables us to take care of this vast group of persons. It seems to me that the law should be broadened so that individuals who are potential criminals can be taken care of. Nothing can be done at the present time except to let them run at large until they commit a crime which finally lands them in prison; but something should be done to protect society against them. I feel that this committee is stable and reliable and that if this House of Delegates gives it permission to act as it thinks best, we may get some solution for this big problem.

DR. W. P. GARDNER, Saint Paul: As a member of the Committee, I agree with Dr. McKinley and would like to have an expression of opinion from the House of Delegates.

DR. C. K. ROHOLT, Waverly: The medical profession has failed in this matter no more than the legislators. I am not at all afraid that we cannot get proper legislation through if only legislators understand. The trouble is they don't understand. Let us inform our legislators and don't let us hide. This is a big problem and needs attention.

DR. MCKINLAY: I think this committee is potentially a powerful committee. We could safely let them lead us in this matter. We all feel it is a field that has to be pioneered first, in a committee, before it can be brought out for discussion in larger groups. I move that we include in our motion that the report of this committee be accepted and that the committee be direct-

ed, also, to undertake a study along the lines presented here today.

The motion as amended was moved, seconded and carried.

DR. MCKINLAY: The report of the Committee on Industrial Health is accepted and approved. It is the feeling of the committee that the physicians of the state are not sufficiently informed as to the Occupational Disease Law, particularly as to the definition of occupational disease, and its medical and legal aspects. It is suggested that some further means be taken to inform the profession of the state about this matter.

The recommendation of the committee that the maximum fee of five dollars be charged for mass x-ray examinations under the Occupational Disease Law of the state is commended.

Acceptance of the report was moved and seconded.

Dr. F. J. Hirschboeck of Duluth answered a question from the floor about the five dollar x-ray fee, in the absence of the committee chairman. He said it applied only when examinations are made en masse for a large number of employes in a given industry.

The motion was carried.

DR. MCKINLAY: The report of the Committee on Interprofessional Relations is commended. The Reference Committee emphasizes Paragraph A of the recommendations contained in the report to the effect that final judgment be deferred as to the proposed bill until its actual merits are determined.

With regard to pharmaceutical relationships, all efforts to establish a sound therapeutic basis, rather than commercial propaganda, concerning vitamin items should be encouraged.

Speaker Will called on the chairman, Dr. W. P. Gardner.

DR. GARDNER: In its preliminary form, the bill calls for the licensing of all nurses. It does specifically provide that persons who wish to give nursing services gratuitously, such as neighbors caring for one another, may do so without licensing. It also provides that persons whose chief duties are not nursing, but housekeeping, for example, may assist in caring for the sick and will not be considered nurses under the meaning of the Act.

It provides for one thing which is also provided for in the present Nurse Practice Act; but which has never been carried out due to an erroneous ruling. The present act provides for annual registration of all registered Nurses. Such registration should have been carried out long ago, but it is being done now by ruling of our present attorney general. The new bill makes provision for non-professional or practical nurses now engaged in nursing to come under the act with a waiver, if they have been engaged in practical nursing for a period of two years or more prior to their application for registration and if they are recommended by two physicians and two patients for whom they have worked.

DR. H. R. BAKER, Hayfield: I would like to inquire if any provision is made for Nurses' Aides.

DR. GARDNER: The bill provides for two classifications: one for what we called registered nurses and one for all other persons who have trained or experience which allows them to qualify as practical nurses but not on a level with the registered nurse. That includes Nurses' Aides. The bill sets up the requirements for admission to training to those in the second classification. They will be licensed to practice as licensed attendants. They must be at least 20 years old, of good moral character, of good physical and mental health and must have at least an eighth-grade education or its equivalent, together with such other qualifications as the Board of Examiners for Nurses may require.

The applicant must have successfully completed an accredited course of training of approximately nine months' duration. Allowances are made, as I said before, for those who are now in nursing practice below the registered nurse level.

DR. L. L. SOGGE, Windom: What would happen to graduates from the smaller hospitals who are not entitled to take examinations as registered nurses under this bill? Would they have to apply for a license?

DR. GARDNER: Under this bill they would have to apply for a license as Nurses' Aides or attendants. At the present time their training does not give them credit toward the degree of registered nurse and so their status would remain the same as it is now.

Dr. F. H. Dubbe of New Ulm asked if Dr. Kurten could tell the delegates about the Wisconsin law, sponsored by the Wisconsin State Medical Society.

DR. KURTEN: We have set up a nine-month training course for girls who will be licensed as trained attendants. Our act does not have a "grandfather clause" (grandmother in this case) which takes in people who have been practicing as practical nurses. All who wish to practice under the new category must train for it now. I think this matter is extremely important because we feel in Wisconsin that much of the state is without adequate nursing service and that many of the hospitals cannot qualify under the present high standard for registered nurses but can do a splendid job of training girls on a nine-month basis to function in all communities where people want somebody who is more than just an attendant for sick people. As a state society we proposed our bill and fought it through. After considerable difficulty with the Nurses' Association we made them see our point of view—that we wanted to supply an urgent public need. We haven't started to train our girls as yet because it is quite a tedious job to get the curriculum worked out and get the program under way. That part is now done, however, and we are soliciting the schools for training.

In response to a question, Dr. Kurten said that no standard fee for the services of these trained attendants had been set up. The fee will probably be established by the Nurses' Association on a community basis. It may be four and a half or five dollars. The girls will not be allowed to do the work of a registered nurse but they may work in the hospitals. They will be allowed to do special nursing within certain limitations. They may care for the chronically ill but are not allowed to take care of acutely ill patients in the first four or five days, or of obstetric patients for the same period. Otherwise they may function as seems best in each case. Nurses are constantly raising their standards, he said. There is a move on foot now in the nurses' associations to create a new category of registered nurses for the girl who graduates from a large university hospital with an academic degree of five years' training.

This is going to present a problem which we must deal with and the need of the people for practical nursing care must be protected.

DR. NORMAN BAKER, Fergus Falls: We are certainly not opposed to nursing education at as high a level as possible. In the small hospitals around the state, however, most of us are now training Nurses' Aides. We couldn't run the hospitals without them. I believe it is a distinct hazard to the future of all these girls to allow the State Board of Nurse Examiners to determine provisions for licensure.

In response to a question as to how to classify a rural hospital, Dr. Kurten said that in Wisconsin they classify a hospital having 50 beds or less, and a hospital population of an average of 30 patients, as a rural hospital.

Speaker Will called the attention of the delegates to the fact that the Committee on Public Policy of the state association should be consulted well in advance with reference to any bill in which they might be interested.

It was moved, seconded and carried that the report of the committee be accepted.

DR. MCKINLAY: The report of the Committee on Diabetes is accepted and its emphasis commended. The common difficulty encountered by physicians in making special dietary requests to ration boards is noted. Further instruction of the patient may often make unnecessary special dietary requests from ration boards, except possibly for meats and fats.

DR. J. R. MEADE, Saint Paul, chairman: The big thing dealt with by the Committee on Diabetes has been the rationing problem. Some of the physicians have given patients blanks to fill out themselves and the patients have asked for as much as thirty or forty pounds of meat and fifteen pounds of butter. We had to try to iron out the difficulties with the Ration Board.

It was moved, seconded and carried that the report be accepted.

DR. MCKINLAY: Acceptance of the report of the Committee on Fractures is recommended in its entirety and it is also recommended that the association make available to the profession throughout the state information relative to proper immediate care of fractures.

Circumstances make treatment of fractures in their early stages a general practitioner's problem and, as a result, he must be kept abreast of the latest developments and best methods of treatment.

It was moved, seconded and carried that the report be accepted.

DR. MCKINLAY: The consideration by the Committee on Child Health of the advisability of making rheumatic fever a reportable disease in the state of Minnesota is noted. In view of the apparent increase in this disease and its importance as a cause of chronic disease, this Reference Committee feels that further emphasis should be placed upon recognition and treatment. To this end, it would appear that making rheumatic fever a reportable disease would be of benefit. The committee report is commended and acceptance recommended. It was moved, seconded and carried that the report be accepted.

DR. MCKINLAY: Acceptance of the reports of the Committees on Ophthalmology, Maternal Health, and Military Affairs is recommended.

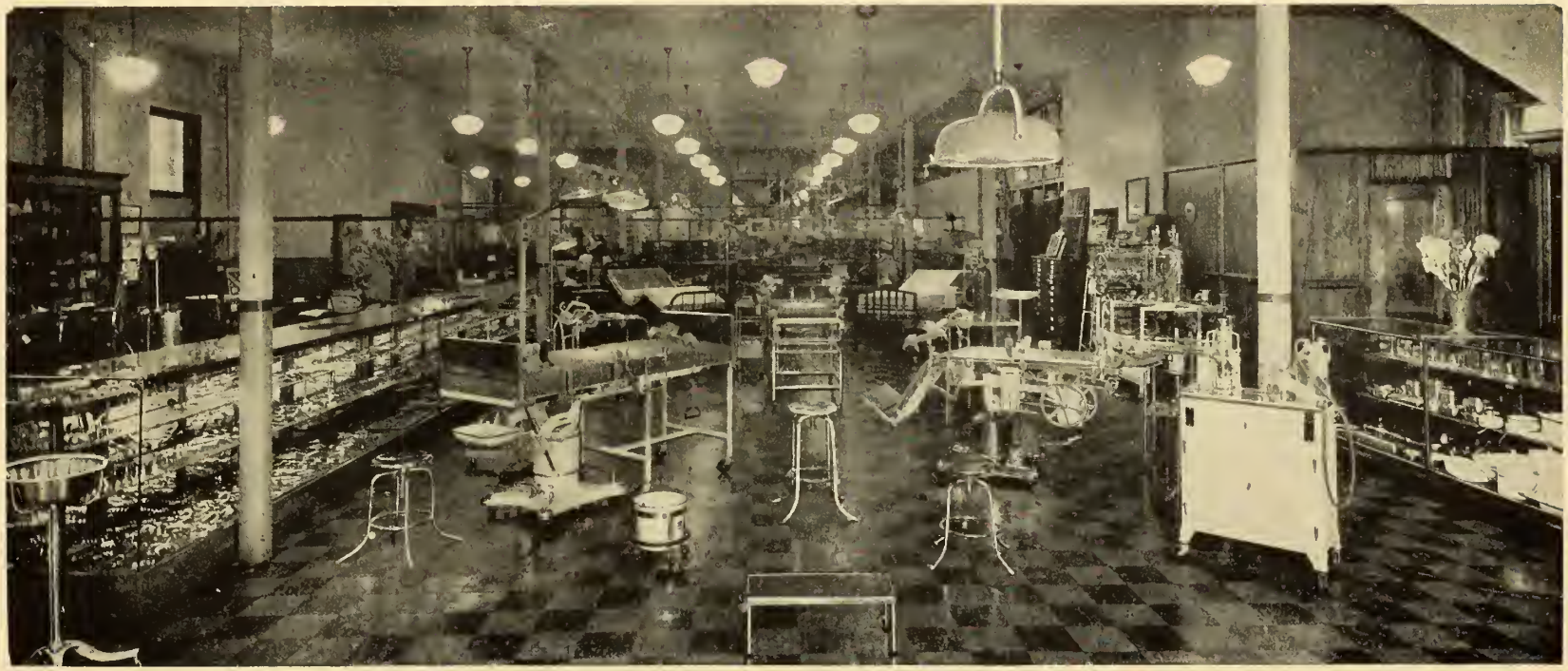
It was moved, seconded and carried that these reports be accepted.

(To Be Continued in October Issue)

Tuberculosis is unique among communicable diseases in the fact that its transmission from one person to another depends in large measure upon the dosage of bacilli and repeated opportunities for infection rather than upon a single exposure. Intelligent patients with occasionally positive sputum need not be a serious menace to members of their families or other associates if they have been properly educated.—ESTA H. MCNETT, *American Review of Tuberculosis,* November, 1942.



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Of General Interest

Dr. Ludwig R. Lima, Jr., of Montevideo has been appointed assistant railroad surgeon for the Chicago, Milwaukee Railroad in Montevideo.

* * *

Dr. Howard S. Selvig, formerly of Alexandria, Minnesota, recently moved to Saint Paul, where he is a member of the staff of Bethesda Hospital.

* * *

Dr. G. H. Purves of Lake Benton has moved to Hendricks, Minnesota, where he is associated in practice with Dr. Peter E. Hermanson in the Hendricks Clinic and Hospital.

* * *

Dr. H. O. Padgett of Rochester will leave his practice this month for active duty in the Navy. He will report to the U. S. Naval Hospital in Seattle on October 10.

* * *

Dr. C. E. Carlson recently moved from Aitkin, where he had practiced for the past nine years, to be associated with Dr. George Clifford in the Alexandria Clinic, Alexandria, Minnesota.

Dr. Miland E. Knapp, Clinical Associate Professor of Radiology and Physical Therapy, University of Minnesota, was inducted as president of the American Congress of Physical Therapy at its annual meeting in Cleveland, Ohio, in August.

* * *

Dr. W. J. McCarthy of Madelia, who has practiced in that community for the past forty-seven years, retired in August. At the time of his retirement he was the oldest practicing physician in point of continuous service in Watonwan County.

* * *

Dr. Walter C. Alvarez of Rochester was the Alpha Omega Alpha lecturer for 1944 at the Vanderbilt University School of Medicine at Nashville, Tennessee, July 13. His subject was "The Effects of Emotion on the Human Body."

* * *

Dr. Harry Lee Parker of Dublin, Ireland, who was a member of the staff of the Mayo Clinic, Rochester, from 1925 to 1934, has been elected president of the



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Royal Academy of Medicine in Ireland and also president of the Dublin University Biological Association.

* * *

Dr. C. L. Sherman of Luverne at the recent annual meeting of the Southwestern Minnesota Sanatorium was elected president of the Sanatorium Board for the thirtieth consecutive time. Dr. Sherman was chosen president when the Board was first organized in 1914. During that period he has witnessed a notable decrease in deaths from tuberculosis in the district.

* * *

Dr. D. S. Branham of Albert Lea, who has been overseas as Lieutenant Colonel in the Medical Corps the past two years, was in this country on leave in August, awaiting reassignment instructions. Dr. Branham's son, Robert, is a First Lieutenant in the Engineering Corps of the Army.

* * *

Dr. Norman Lende, who returned from an appointment to the Health Department of the Panama Canal this summer, has located at Glencoe, Minnesota, where he has opened offices for the general practice of medicine and surgery. Dr. Lende is a graduate of the University of Minnesota Medical School and practiced at Faribault for eleven years before he accepted the appointment in the Canal Zone in 1941.

* * *

Russian War Relief Headquarters has announced that American people have contributed $13,715,070.99 in cash and contributions in kind to Russia in the first six months of 1944. Cash contributions received through the National War Fund amounted to $4,091,-153.98. The total was more than twice the amount contributed in the first six months of 1943.

Contributions in kind are accompanied by the name of the American donor. This gives a personal aspect to the giving which should assist in developing friendly relations between the two countries.

* * *

American College of Surgeons Postpones Congress

For the third consecutive year the Annual Clinical Congress of the American College of Surgeons, which was to have been held in Chicago in October, has been cancelled. This action was taken after consultation with officials in Washington who emphasized the transportation shortage and the desirability of eliminating all convention travel as an aid to the war effort. The same officers will continue in office, and fellowship in the College will be conferred *in absentia* on the class of initiates of 1944. War conditions permitting, the Clinical Congress will be held in the fall of 1945.



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(1) Am. J. Obst. & Gyn., 35:839, 1938. (2) West. J. Surg., Obst. & Gyn., 51:150, 1943. (3) Clin. Med. & Surg., 46:327, 1939. (4) Med. Rec., 155:316, 1942.

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In Memoriam

EDWARD C. GAGER

Dr. Edward C. Gager, a specialist in dermatology in Saint Paul for many years, died from gallstone ileus, July 29, 1944, at the age of sixty-two.

Doctor Gager was born in Saint Paul, December 16, 1882. He graduated from Central High School in 1900, and the Medical School of the University of Minnesota in 1905.

He began practice in Chamberlain, South Dakota, and later moved to North Branch, Minnesota. He began practice in Saint Paul in 1908, and became interested in dermatology, taking postgraduate work in Paris, Vienna, and the Postgraduate Medical Hospital in New York. He was Clinical Instructor in Dermatology on the faculty of the University of Minnesota Medical School and was well informed in his specialty.

Doctor Gager was a member of the Ramsey County Medical Society, the Minnesota State and American Medical Associations, the American College of Physicians, and the Minnesota Dermatological Society.

He is survived by three brothers, Paul C. Gauger of Memphis, Tennessee, Alfred R. Gauger of State College, Pennsylvania, and Ray R. Gauger of Saint Paul.

ALBERT CHENEY HEATH

Dr. Albert C. Heath, for many years a prominent specialist in ear, nose and throat diseases in Saint Paul, died at St. Luke's Hospital, Saint Paul, April 21, 1944, after suffering from Parkinson's disease for a number of years.

Dr. Heath was the son of the Rev. Albert Hayford Heath and Lucy J. (Simonds) Heath, and was born in Auburn, Maine, November 10, 1868. His father was a Congregational minister and pastor of churches in St. Johnsbury, Vermont, New Bedford, Massachusetts, and Saint Paul, as well as in Auburn.

Dr. Heath prepared for Dartmouth at Friends' Academy in New Bedford, Massachusetts. At college he was a member of Alpha Delta Phi and Casque and Gauntlet societies and played third base on the baseball team.

Soon after graduating from Dartmouth in 1891, he came to Saint Paul and attended the University of Minnesota Medical School, earning his tuition as assistant to Dean Millard. After graduating in 1894, he interned at the City and County Hospital (Ancker) in Saint Paul and began general practice with an office on West Seventh Street. After two or three years he became assistant to Dr. Charles Lyman Greene, Saint Paul. After taking postgraduate work in New York and Boston in 1898, he became associated with Dr. Jacob Shadle, specializing in ear, nose and throat diseases. In 1905-06 he studied abroad in London, Edinburgh and Heidelberg under Dr. Killian.

(Continued on Page 768)

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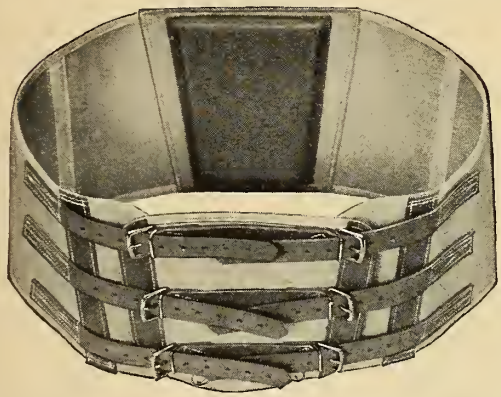
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(Continued from Page 766)

Dr. Heath was at one time on the staffs of the City and County Hospital, the Northern Pacific Beneficial Association Hospital and St. Luke's Hospital and was a fellow of the American College of Surgeons.

He married Ray Lamprey of Saint Paul in 1901, and had three children, Albert C., Jr., Morris L. and Eve Goodhue.

Dr. Heath was a member of Nu Sigma Nu fraternity and belonged to the Ramsey County Medical Society, the Minnesota State and American Medical Associations, and the Minnesota Academy of Medicine. Since his retirement from practice some ten years ago, he has lived in his country home at Arcola, near Marine, on the banks of the St. Croix River.

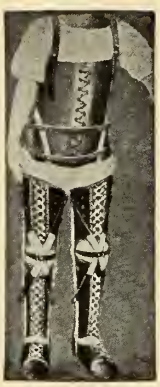
Dr. Heath was blessed with many good friends, both within and without the profession, who appreciated him for his social and professional qualities and his patience during his last years of illness.

J. WILLIAM PARKER, JR.

Word has been received of the death of Dr. J. William Parker, Jr., former fellow in surgery of the Mayo Foundation, Rochester, which occurred on July 16, 1944, at the Illinois Central Hospital, Chicago, Illinois.

Dr. Parker was born at Warsaw, Illinois, on January 21, 1895. He received the degree of B.S. in 1919 and of M.D. in 1920 from the University of Illinois. He was an intern at the Chicago Lying-In Hospital and at the Grant Hospital of Chicago. He entered the Mayo Foundation as a fellow in surgery on April 1, 1922; he left the Mayo Foundation on January 1, 1927, at which time he established a practice in surgery and urology in Chicago which he continued until the time of his recent illness. Dr. Parker was a member of the American Medical Association and of the Alumni Association of the Mayo Foundation.

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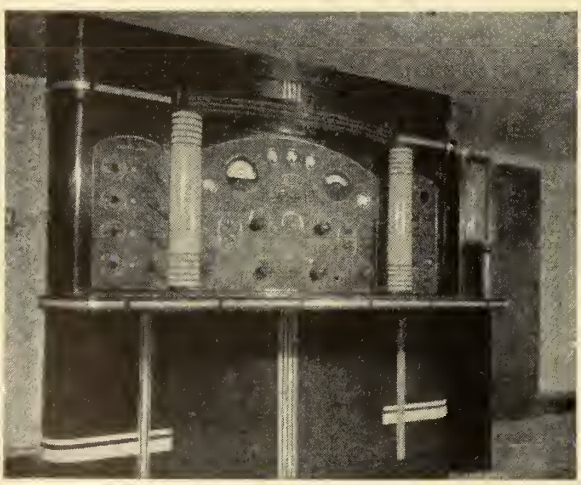
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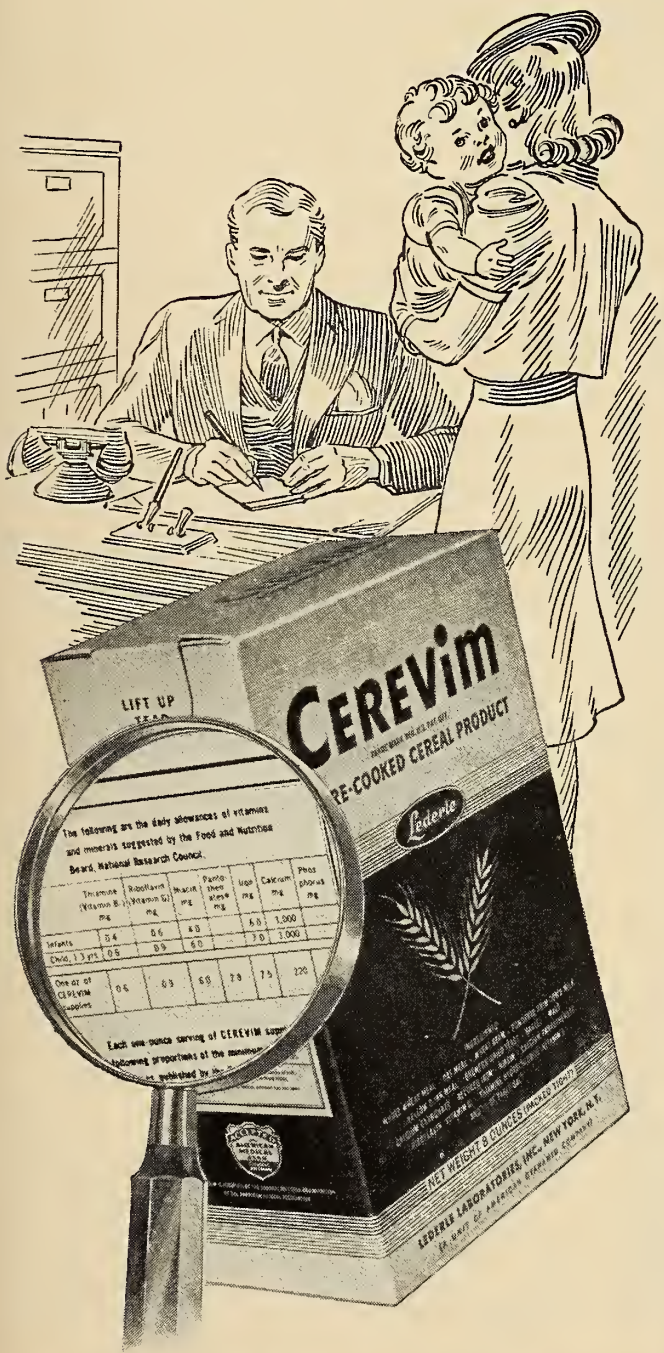
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REPORTS and ANNOUNCEMENTS

OMAHA MID-WEST CLINICAL SOCIETY

The Omaha Mid-West Clinical Society will hold its twelfth annual session in Omaha, October 23-27, 1944, with headquarters at Hotel Paxton.

The five-day program will be in the nature of a refresher course for specialists and general practitioners, and well known visitors from other parts of the country will take part in the symposium on Diabetes, X-Ray Treatment, Acute Respiratory Infections, War Medicine and Surgery.

Medical officers attending will not be required to pay the five dollar registration fee.

Additional information may be obtained from Dr. J. D. McCarthy, Secretary-Director of Clinics, 1036 Medical Arts Building, Omaha 2, Nebraska.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The tenth annual meeting of the Mississippi Valley Medical Society will be held at the Pere Marquette Hotel, Peoria, Illinois, Wednesday and Thursday, September 27 and 28, 1944.

Some twenty clinician-teachers will present the two-day program, the first day being an All-Chicago personnel and the second day All-St. Louis. The program is specially arranged for general practitioners and all ethical physicians are invited to attend.

Programs may be obtained from Dr. Harold Swanberg, 209 W.C.U. Building, Quincy, Illinois.

MEDICO-LEGAL CONFERENCE AND SEMINAR

The Massachusetts Medico-Legal Society in conjunction with the medico-legal departments of Harvard, Boston University and Tufts Medical Schools has arranged for an all-day Conference to be held at the Mallory Institute of Pathology, Boston City Hospital on Wednesday, October 4, 1944. It will include lectures, demonstrations, and informal discussions concerning many subjects in legal medicine, particularly stressing some of the more recent procedures. This meeting will be open to any registered physician, lawyer, police official, senior medical student or other medical investigator who may be interested and cares to register. No limit in number has been made. There will be no fee for registration, While advance application is not essential, it would be helpful to those arranging the conference if notice of intention to attend be sent prior to October 1 to Dr. W. H. Watters, Department of Legal Medicine, Harvard Medical School, Boston.

The Harvard Medical School, Courses for Graduates, with the coöperation of the Medical Schools of Boston University and Tufts College offers a seminar in Legal Medicine to occupy the entire week of October 2-7, inclusive. It is planned particularly for medical examiners and coroners' physicians but will be open to any other suitable graduate of an approved medical school.

The course will be practical rather than theoretical and will consist of autopsy demonstrations, technique and interpretation of laboratory tests, study of the day-by-day cases of a medical examiner, round-table conferences, and the many subjects now included in the widening field of legal medicine. In order that each participant may receive the maximum benefit, the enrollment has been limited to fifteen. For the Seminar the fee is $25. Application should be made on or before October 1 to Harvard Medical School, Courses for Graduates, 25 Shattuck Street, Boston 15, Massachusetts.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

FERTILITY IN MEN. Robert Sherman Hotchkiss, B.S., M.D. Lt. Comm. (MC) U.S.N.R. (on active service); Assistant Professor of Urology, New York University Medical College; Instructor in Surgery (Urology) Cornell Medical College; Assistant Visiting Attending, Dept. of Urology, Bellevue Hospital; Assistant Visiting Attending in Surgery (Urology) New York Hospital; Chief of Urological Clinic, New York University Medical College Clinic. 216 pages. Illustrated.

and

FERTILITY IN WOMEN. Samuel L. Siegler, M.D., F.A.C.S. Attending Obstetrician and Gynecologist, Brooklyn Women's Hospital; Attending Gynecologist, Unity Hospital; Assistant Obstetrician and Gynecologist, Greenpoint Hospital; Attending Sterility Clinic, Greenpoint Hospital; Consultant in Gynecology, Rockaway Beach Hospital; Diplomate American Board of Obstetrics and Gynecology; Fellow New York Academy of Medicine; member Society for the Study of Internal Secretions. 450 pages. Illus. Price, cloth, $8.00, 2 volumes in slip case. Philadelphia: J. B. Lippincott Co., 1944.

SEGMENTAL NEURALGIA IN PAINFUL SYNDROMES. Bernard Judovich, B.S., M.D., Instructor in Neurology, Graduate School of Medicine, University of Pennsylvania; Clinical Instructor in Neurology, Women's

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MEDICINE—Two-Week Course in Internal Medicine starts October 16.
GYNECOLOGY—Two-Week Intensive Course starts October 2. One-Week Course in Vaginal Approach to Pelvic Surgery starts October 23.
OBSTETRICS—Two-Week Intensive Course starts October 16.
ANESTHESIA—Two-Week Course in Regional, Intravenous and Caudal Anesthesia.
GASTROSCOPY—Personal Course starts October 2.
OTOLARYNGOLOGY—Two-Week Intensive Course starts October 2.
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Medical College; Chief of Neuralgia Clinics, Philadelphia General Hospital, Graduate Hospital and Women's Medical College Hospital, Philadelphia; and William Bates, B.S., M.D., F.A.C.S., F.I.C.S. Professor of Surgery, Graduate School of Medicine, University of Pennsylvania; Consulting Surgeon, Babies' Hospital and Philadelphia Home for Incurables; Consulting General Surgeon, Wills Hospital, Philadelphia, Pa. Foreword by Joseph C. Yaskin, M.D., Professor of Neurology, Graduate School of Medicine, University of Pennsylvania. 313 pages. Illus. Price $5.00, cloth. Philadelphia: F. A. Davis Co., 1944.

POLIOMYELITIS. E. C. Rosenow, M.D., Professor of Experimental Bacteriology, University of Minnesota, Mayo Foundation, Rochester, Minnesota. 86 pages. Illus. Paper cover. New York: International Bulletin, 319 West 103rd St., 1944.

THE ANALYSIS AND INTERPRETATION OF SYMPTOMS. Edited by Cyril M. MacBryde, M.D. 302 pages. Illus. Price, $4.00, cloth. Philadelphia: J. B. Lippincott Co., 1944.

PSYCHOSOMATIC MEDICINE. Edward Weiss, M.D., and O. Spurgeon English, M.D. 687 pages. Price $80.00. Philadelphia: W. B. Saunders Co., 1943.

"Phychosomatic medicine is a new term but it describes an approach to medicine as old as the art of healing itself." The psyche (mind) and soma (body) profoundly influence one another. The psychological and physiological mechanisms of the individual are not separate entities. They are indivisible in the etiology and symptomatology of any disease. Diagnosis must therefore be founded upon psychobiology and the physician must know psychopathology as well as tissue pathology. Treatment includes both psychotherapy and organic therapy.

Psychosomatic medicine is chiefly concerned with those sick people who do not have any definite bodily disease to account for their illnesses, whose ailments are purely functional. Secondly, it deals with those who do have organic disease but whose symptoms are in part dependent upon emotional factors. Thirdly, it considers those who have organic disease related to the sympathetic nervous system wherein the psychic factor is important in the etiology and treatment.

Psychosomatic Medicine is an excellent treatise for the general practitioner and specialist alike. The subject is clearly presented with a minimum of case reports and the chapters are conveniently arranged. One may obtain a general idea of the subject by reading the first chapter on the principles of psychosomatic medicine, the second on personality development and psychopathology and the last four on psychotherapy. One may study the subject further by reading the intervening seventeen chapters which deal with the cardiovascular, gastro-intestinal, endocrine, genito-urinary, respiratory and central nervous systems, the special senses, certain special topics and military medicine.

ROYAL C. GRAY, M.D.

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 27 October, 1944 No. 10

RESPONSIBILITY OF THE PHYSICIAN IN THE PROBLEM OF MATERNAL MORTALITY

JOHN H. MOORE, M.D.

Grand Forks, North Dakota

THE long title for these short remarks reminds me of what a famous Professor of the Art of Preaching tells his classes. He says that there are three questions to be answered in every sermon: Where are we? How did we get here? How do we get out? While I do not intend to preach a sermon or take up a collection, it seems to me that a similar technique can be profitably employed in developing my part of this symposium.

Where are we? We are emerging from the "Act of God" era in explaining maternal deaths into the preventive medicine era of modern obstetrics. The past ten years have started us on our way. We were told, by statisticians, that the United States ranked far down the list of so-called civilized nations in maternal mortality. We studied statistics, we drew maps and we plotted curves and then, state by state, we began a statistical approach to the problem of lowering maternal deaths. Then we discovered, statistically, what Litzenberg and other great teachers had known, practically: that the fatal triad, infections, toxemia and hemorrhage, was responsible for 75 per cent of the maternal deaths.

This statistical approach focused attention sharply on the major mother-killing conditions and served a most useful purpose. We attacked the problem en masse. We dropped the death rate sharply from infection, moderately from the toxemias and somewhat from hemorrhage. In North Dakota we reached a statistical low of 17.2 per 10,000 live births in 1940; in 1941 it had risen to 26 and in 1942 it was 24 per 10,000 live births. These are good statistics. You have better ones for Minnesota. But we are at the end of the statistical era, if I can read the signs correctly, and we are entering the era of "personal responsibility."

How did we get here? We got here painfully and slowly. Some thought that the preventive medicine era of modern obstetrics was a New Deal obstetric Utopia. Statistics, sulfons and serum were to abolish most of our obstetric problems and regimentation would take care of the rest. And then there came prominently to the foreground the knowledge that, after all, the problem of reducing material mortality still further was a personal problem. This has been discovered by your Maternal Welfare Committee just as it has been discovered elsewhere by similar committees. Maternal deaths cannot be analyzed without realizing that the preventive medicine domain of modern obstetrics will never be fully occupied by those worthy to possess it without the assumption by the individual physician of his personal responsibility.

I am emphasizing personal responsibility because, despite all the attempts that have been made and are being made to regiment physicians into a standardized pattern, professionally and economically, the personal responsibility of physician to patient still exists. It may be changed if the

From the Grand Forks Clinic, Grand Forks, North Dakota.

Read before the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 14, 1944.

Emergency Maternity and Infant Care Program continues long enough under the pseudo-safeguards of the Children's Bureau; and I would certainly expect it to disappear entirely under the beneficent paternalism of Senate Bill 1161. And

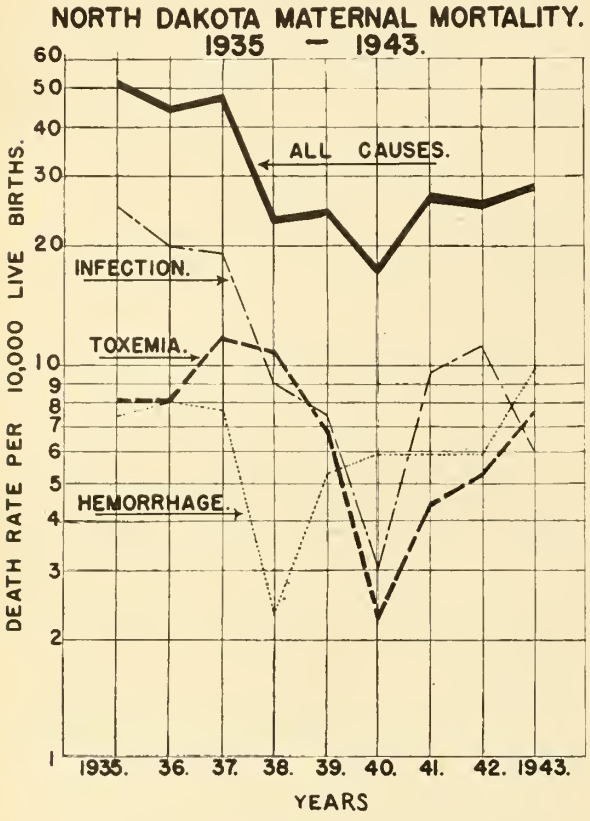


Fig. 1.

while we are about it, let's emphasize the personal responsibility of the patient to the physician!

We got here through the mass education of physicians and patients. Beginning in the 1920's and intensified in the 1930's, lay and professional publications and lay and professional speakers taught that much of the maternal mortality was preventable. The years between 1935 and 1940 saw the greatest drop in that mortality that had ever been recorded. Patients began to realize the added safeguards which modern obstetrics could bring them and they demanded and obtained prepartum care in ever-increasing numbers. Physicians sought intensive instruction in obstetrics in local groups, short courses in teaching centers and the longer postgraduate courses to fit them for specialization. One of the most famous and most effective centers for the short course type of instruction is at the Center for Continuation Study at the University of Minnesota. Hundreds of physicians from this State and your neighboring States have attended the short postgraduate courses in obstetrics given there. I am firmly convinced that the type of instruction they have received has been reflected in the decreased maternal mortality which you in Minnesota and we in North Dakota have enjoyed.

But now that maternal mortality rate is, for practical purposes, stationary or, as in North Dakota, rising a bit! We are at a most critical time in our campaign for Safer Motherhood; in fact, we are at a place of crisis. But I would call your attention to the Chinese definition of the word "crisis": It means dangerous opportunity. What are some of the factors which make it critical? My observations are personal and I give them to you as such.

I detect an increasing neglect of prepartum care on the part of the primiparous patient. This is particularly noticeable in the young serviceman's wife who, as long as she is able to do so, follows her husband from camp to camp and, when she can no longer do that, comes home to reside with her parents or other relatives to await confinement. In many such cases her prepartum care has been sketchy and only occasionally has it been adequate. In private practice in 1940 I treated thirteen patients with the graver toxemias of pregnancy; there were twelve in 1941, twelve in 1942, and ten in 1943. Roughly, they comprised about 7 per cent of my private practice and, practically, the number was almost constant. I didn't see an eclamptic patient in private practice in 1940 or in 1941 but in 1942 I treated three and in 1943, five. Of these eight eclamptic patients, six were primiparous patients and two were pregnant for the second time. In only one of these had prepartum care been sought before the sixth month. We do not know the cause of eclampsia. We do know that it can largely be prevented by adequate prepartum supervision. That I was not able to prevent it in eight cases in two years leads me to wonder if to the hazards of war we may not have to add an increase in the fulminating type of toxemias of late pregnancy.

An analysis of thirty-two maternal deaths in North Dakota in 1942 showed that ten died from infection, eight from hemorrhage and seven from toxemia. If we add the five reported deaths from

abortion and assign these to either infection or hemorrhage or both, the Fatal Triad accounted for thirty of the thirty-two deaths. I took the summaries of the case histories as supplied by our historian for these fatal cases and, as far as possible, broke them down into the three main groups to see what treatment had been employed. Some of these patients were in extremis when they were first seen by the physician and in several there was no time for any plan of treatment to be effective. Nevertheless, for the ten deaths from infection and the five deaths from abortion, with or without mention of infection, seven case histories were complete enough for study. They showed that four of the seven patients had sulfon therapy and two had had transfusions. Four had had some kind of prepartum care.

The eight case histories of death from hemorrhage were all available for study and all eight had had some prepartum care. Consultation had been held in two, transfusions had been given in four and one patient had had plasma.

Six of the seven deaths from toxemia showed, from the available histories, that four had had some kind of prepartum care and consultations had been held in three.

This break-down is incomplete but I believe it partly answers our second question, "How did we get here?" We got here with "too little and too late!"

I charge the patient with "too little" on the side of prepartum care in these fatal cases. Ignorance and neglect on the part of the patient in seeking medical care early in pregnancy and continuing it faithfully throughout pregnancy are all too frequent. I wonder if it will be any better under the Maternity and Infant Care Program of the Children's Bureau? Certainly no bureau ever had a better chance to advertise its services to a prospective clientele. This should provide a large group of the younger child-bearing women for study and I hope that it will be studied thoroughly from the standpoint of when the patients sought prepartum care and how faithfully they followed it.

In ten of the twenty-one fatal cases I analyzed in the three main groups, there had been consultations. That at least indicates an attempt on the part of the attending physician to get help, not always an easy matter in the smaller communities.

Therapy in fatal cases of anything is always a debatable point; in maternal deaths it is doubly so. I found a rather limited use of sulfon therapy in the fatal cases of infection I analyzed but in two of them, blood transfusions had been given with the sulfon therapy. I would sum up this feature by saying that supportive therapy, in general, was lacking in the group of infected patients who died. Every patient with a severe or continuing puerperal infection should have small frequent blood transfusions, 250 c.c. every forty-eight hours, in addition to the chemotherapy.

In the deaths from hemorrhage there is one glaring fault: plasma or a blood substitute was used but once! But, in spite of this, blood transfusions, much more time consuming, were given to four of the eight fatal cases.

Therapy in the fatal toxemias showed one great weakness to me, aside from the fact that the physicians often first saw these patients when they were in critical condition, sometimes in extremis. That weakness lies in the fact that these patients not infrequently died from what was done to save them after the toxemia had been temporarily controlled. I refer to the natural tendency of the physician to want to empty the uterus as rapidly as possible. This too often results in shock and in hemorrhage and, if the patient survives those two dangers, she may not infrequently die from infection. Maybe it can be done, but I have yet to see a manual dilatation of the cervix. To me such an operation is manual laceration. Maybe cesarean section is the quickest way to empty the uterus in a toxemia of pregnancy but it is about the most deadly procedure one can employ. By and large, I cannot do anything but condemn accouchement force in the management of the toxemias of pregnancy.

I maintain that we reached our present and enviable position, out of the Act of God era and into the domain of Modern Obstetrics, largely by the assumption of a personal responsibility for his obstetric patient's welfare by the American physician in private practice. The American physician is not as vociferous as some of his critics and certainly not as visionary. I have heard less talk in recent years about "rural" as compared with "urban" obstetrics and more about the difference between "good" and "bad" obstetrics which, after all, is the only distinction worth while.

And now to answer my last question. How do we get out? I first want to ask it in a little dif-

ferent form. What is our present objective in the problem of Maternal Mortality and what is the responsibility of the individual physician in solving it?

I have been studying maternal mortality statistics and case histories of maternal deaths in North Dakota for ten years. I am convinced that it is perfectly possible to reduce maternal mortality to a point where not more than one woman in one thousand will die as a result of child-bearing. I believe that this can be done through the American way of private practice. I doubt if it can be accomplished through various schemes of regimentation, including the Maternal and Infant Care Program of the Children's Bureau and extending on to the potentialities of the Wagner bill. As a physician, I have become very skeptical of the professional doers of good to people, whether they are in Government bureaus or out of them. I am disappointed that our profession has not taken more positive steps to extend the benefits of pre-payment plans for medical services to the lower income groups but there are signs that such plans are being developed and that they can be applied to maternity care. To be effective they must accomplish two things: (1) they must preserve the personal relationship between patient and physician; (2) they must remain under medical control. It is time to plan for coöperative medicine and put those plans into effective operation. The medical profession should and must take the lead in such plans if they are to render the most effective medical care to the greatest number of our people.

In no field of medicine is the personal patient-physician relationship more important than in obstetrics. Here is the greatest opportunity the physician can find for intensive education. His obstetric patient is particularly receptive to his personal instructions and, when she realizes his personal interest in her welfare, she will gain more from those instructions than from reams of printed matter. I know because I have tried it.

For the physician, aware of his personal responsibility for the safety of his obstetric patient, I prescribe completeness in his study of her, conservatism in his management of her and consultation when he is in doubt about her. We have reached the point in reducing maternal mortality where the statistical approach must give way to the personal.

The three major enemies of safer motherhood, infection, toxemia and hemorrhage, remain as the three main reasons why your excellent maternal mortality record is not even better. Reduce by 50 per cent the deaths from these largely preventable causes and you will be within striking distance of the one in one thousand maternal deaths that ten years ago would have been declared an impossibility. Your splendid system of practical postgraduate instruction in obstetrics in Minnesota has supplied the information and the inspiration necessary to accomplish this.

Every physician practicing obstetrics in your State and mine should have plasma immediately available for the treatment of obstetric shock and hemorrhage. This is no longer a large urban hospital luxury; it is a small community hospital necessity.

Conservatism and consultations can reduce the death rate from the toxemias. Staff organization is no longer the prerogative of the large city hospital; it can be applied even more effectively to the smaller community hospitals.

Certainly we are individualists! That is one of the main reasons why American medicine leads the World. But individualists are capable of effective team-work when united in a common cause. I say to you that the American physician has a right to be proud that, from his Litzenbergs, there came the impetus to take maternal deaths out of the "Act of God" era and hold them up to scientific investigation in the white light of Modern Obstetrics; that he has a right to be proud of the statistical approach and the scientific investigation which brought out his defects—and the defects of his patients—with such a startling saving of lives in the past ten years; and that he is proud of the responsibility which is his to lower, still further, that already low death rate in obstetrics.

PLACENTA PREVIA AS A FACTOR IN MATERNAL MORTALITY

RALPH A. REIS, M.D.

Chicago, Illinois

HEMORRHAGE in association with pregnancy and labor should rarely be fatal. This holds especially for placenta previa. This condition usually manifests itself first by slight to moderate hemorrhage. If proper attention is paid to this warning women will not die of hemorrhage resulting from placenta previa, except in the rare instances of embolism or spontaneous rupture of the uterus. An analysis of any series of fatalities resulting from placenta previa will show that such deaths are due to: (1) repeated hemorrhage and shock; (2) injury inflicted by hasty delivery, particularly rupture of the uterus; (3) sepsis, which most frequently results from hasty operative procedures, and (4) the rare air embolism.

The initial, painless, bleeding of placenta previa is usually mild. The obstetrician must heed this warning, and act promptly for there is no expectant treatment of placenta previa. This does not mean that it is necessary or even safe to accomplish delivery immediately. Accouchement forcé, a rapid cervical dilatation, tearing or cutting of the cervix, are not only injurious, but are, in the light of modern procedures, criminal. Objects of the treatment for placenta previa are (1) to stop the hemorrhage; (2) to produce hemostasis; (3) to empty the uterus; (4) to combat anemia.

All patients with placenta previa, suspect or actual, must be hospitalized. Patients diagnosed as suspected placenta previa must *not* be examined rectally or vaginally until the patient is in the hospital with all preparations complete for either vaginal or abdominal delivery. This should be an inviolable rule for the treatment of this condition because even the most gentle vaginal or rectal manipulation may produce an immediate overwhelming hemorrhage.

In a large percentage of instances the fetus is immature, premature, or has died in utero. At no time should the safety of the baby be the factor in the determination of the type of treatment employed. The safety of the mother is of paramount importance. It is the saving of the mother's life that must be kept in mind in determining whether a particular delivery shall be by the vaginal or abdominal route. The latter, that is delivery by cesarean section, is the safest method of delivery for the mother because it can promptly stop hemorrhage. It is safest for the mother only when carried out in a well-conducted hospital and by a competent operator, but under these circumstances it gives excellent results. The cesarean section should be done in the interest of the mother and not of the baby, and should be used in all primigravidas and in all multiparas who have placenta previa centralis.

Vaginal delivery always carries a higher fetal mortality rate. The baby must therefore be ignored for any attempt to hasten delivery on a fetal indication, i.e., extraction through the incompletely dilated cervix, or manual or instrumental dilatation of the cervix will result in lacerations, rupture of the uterus, hemorrhage and sepsis. The vaginal approach is ideal for the multipara with a marginal or lateral placenta previa and for the occasional primigravida with a dilating cervix. Treatment by the vaginal route is aimed at the compression of the placental site in order to stop bleeding. This may be accomplished in various ways; by simple rupture of the membranes; Willett's forceps; traction on the fetal head, and very occasionally by Braxton Hicks' version. Vaginal tamponade is ineffective and dangerous. Bag induction or bag compression of the low-lying placenta has been discarded because of the high incidence of infection associated with the use of bags.

Placenta previa demands immediate and trained obstetric care. This means that the patient must have intelligent treatment, and in most instances obstetric consultation. The enforcement of obstetric consultation and the control of operative obstetrics in general in the City of Chicago by means of free and easily available obstetric consultation has been a large factor in the reduction of maternal mortality during the last ten years (from 3.3 per thousand live births to 1.9 per thousand live births). The ten-year salvage for Chicago is eight hundred mothers. During this

Read at the annual meeting of the Minnesota State Medical Association, Rochester, Minnesota, April 14, 1944.

same period under the rigid control of the Maternal Welfare Committee and the Health Department, there has been a ten-year salvage of 2,448 babies. A certain percentage of the maternal and fetal salvage must be credited to the rules of the Maternal Welfare Committee under which every hospital in the City of Chicago now operates its department of obstetrics.

DISCUSSION OF THE REPORT OF THE MINNESOTA MATERNAL MORTALITY COMMITTEE

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SOME two years ago, this Association authorized the establishment of a committee to be chosen conjointly by the Minnesota Department of Health and the Minnesota State Medical Association to make an exhaustive investigation of all maternal deaths in the state for one year from July 1, 1941, to June 30, 1942. The two co-operating organizations selected specialists from different parts of the state who served without compensation but they employed younger, well-trained specialists to do the field work of interviewing the physicians and obtaining other needed information. A field investigator was sent forthwith to the physician who signed the death certificate and all possible information obtained from him and all other persons or records which might yield additional facts; in fact, a twenty-page questionnaire was completed and then summarized by a committee member. Finally, the whole committee, sitting together, determined the cause of death, ascertained its possible preventability, and fixed responsibility.

These exhaustive case studies revealed many questionable, even inexcusable, obstetric practices, which were not entirely unexpected when we recall that this analysis is limited to women who died.

Even in the face of these regrettable findings, the committee declared, "There is no justification for assuming that this analysis represents in any way a real sample of the practice of obstetrics in Minnesota." However, one cannot avoid some feeling of regret that so many maternal deaths are directly due to dubious procedures of commission or omission, even if traceable to only a minority of physicians. Nevertheless, the faults toward which improvement may be directed are clearly indicated.

Improvement there must be for we are far from the all-out effort demanded of every state by the Maternal Welfare Movement to decrease maternal mortality to an irreducible minimum. It means that every Minnesota physician who practices obstetrics must know and live up to the minimum requirements, at least, for care during pregnancy, labor, delivery and postpartum. This Minnesota Maternal Mortality Committee adopted the following minimum requirements for adequate obstetric care. These are similar to those already established by the American Maternal Welfare Committee:

I. *Prenatal Care*
   1. Adequate history and general physical examination with accurate follow-up of any abnormality revealed by these.
   2. Pelvimetry to include internal, antero-posterior diameter of the pelvic inlet, internal palpation of the sacrum, and intertuberous diameter of the outlet.
   3. Blood Wassermann test.

II. *Routine Prenatal Visits*
   1. Blood pressure.
   2. Urinalysis (especially albuminuria).
   3. Weight.
   4. Abdominal palpation during last two months of gestation.
   5. Reasonably adequate study of all abnormalities detected during these visits.

III. *Labor and Delivery*
   1. Adequate use of generally recognized obstetric procedures.
   2. Strict asepsis.

IV. *Postpartum Care*
   1. Prompt recognition of abnormalities.
   2. Prompt institution of adequate treatment.

V. *Autopsy*
   This should always be requested.

VI. *Death Certificate*
   1. Accuracy in assigning cause of death.
   2. Completeness and accuracy of data requested.

VII. *Birth Certificate*
   1. Completeness and accuracy of data requested.

Using these minimum requirements as a basis for evaluation of adequate or faulty obstetric care, responsibility for each death was determined. It is rather startling to discover from the Committee's survey that only two (1.8 per cent) of the 112 women who died, received adequate prenatal care; only seven (6.3 per cent), proper care during labor and delivery; four (3.6 per cent), sufficient attention postpartum. The remainder received faulty treatment in some phase of their obstetric care.

The object of this survey of all maternal deaths in Minnesota was to discover whether or not pregnant women were receiving adequate maternal care as established by the Maternal Welfare Movement. As we read this survey report, we are forced to the conclusion that in most cases the obstetric observation was grossly inadequate. Few had good prenatal care and in fifty-five cases (49.1 per cent) the fault was directly contributory to death. Treatment during labor and delivery was deficient in eighty-three cases (74.1 per cent), and contributory to death in sixty-one cases (54.5 per cent). Postpartum treatment was faulty in eighty cases (71.4 per cent), and contributory to death in sixty-seven cases (59.8 per cent).

Furthermore, the survey committee concluded that eighty-two (73 per cent) of the 112 deaths were preventable, sixty-eight of them due to physician responsibility alone. Only twenty-seven deaths were not preventable. Nineteen of these twenty-seven were due to nonobstetric complications, like subacute bacterial endocarditis, acute poliomyelitis and pulmonary tuberculosis, to mention only a few. These figures prove that not all Minnesota physicians are making the all-out effort to reduce maternal deaths to an irreducible minimum. In spite of the fact that the maternal mortality rates in Minnesota have been among the lowest, and in many years the lowest in the country, there are evidently too many preventable deaths.

For many years puerperal infection, toxemia and hemorrhage have been known as the "great triad" of causes of maternal mortality. Of course, there are other important factors, like operations injudiciously or unskillfully done. For example, 26 per cent of eighty-one operations were forceps deliveries of which 20 per cent (four of twenty-one) were high forceps; 14.8 per cent were cesarean sections of which five were done after from eight to 120 hours of labor; and 12.3 per cent podalic versions. Of the great triad, toxemia was the cause of seven (6.25 per cent) deaths. The other two of the triad, infection and hemorrhage (and shock), each terminated in thirty (26.79 per cent) deaths. The triad combined resulted in sixty-seven deaths, approximately 60 per cent of the total number of fatalities. The relatively small number of cases of toxemia, namely 6.25 per cent instead of the usual 20 per cent, is another evidence that the physicians of Minnesota have average conception of the toxemias of pregnancy and average ability to cope with them.

However, the survey also indicates that there are still some physicians practicing obstetrics in Minnesota who do not live up to minimum requirements of good obstetric care. Prenatal care was particularly bad, in many instances none at all or very faulty. During labor and delivery, conduct was grossly faulty in three cases. For example, the hypodermic injection of pituitrin was used to induce labor in three, and during labor in five, cases. Convulsions immediately followed the pituitrin in three cases.

Infection and hemorrhage (shock) accounted for sixty (53.3 per cent) of the 112 maternal deaths. There were failures to recognize shock or start prompt treatment. Also there were many failures to replace blood loss with blood transfusions or plasma infusions. Plasma now is so easily obtainable that every practitioner can have his own plasma bank as a good substitute for the blood bank to be found in all larger hospitals. Hence there is no justification for not replacing lost blood by either blood transfusion or plasma infusion.

The survey reveals that there were thirty (26.79 per cent) deaths due to hemorrhage and shock. Nine were caused by postpartum bleeding, four by placenta previa, three from premature separation of the placenta, two from rupture, and one from inversion of the uterus. In fifteen of the thirty, deaths from hemorrhage were definitely contributory on account of failure of the physician to live up to accepted obstetric standards. Communication by another member of the Committee will discuss in detail the causes and treatment of the obstetric hemorrhages. Suffice it to say here that the underlying causes of death were a lack of accurate diagnosis of the causes of the bleeding, proper methods to stop

the hemorrhage, and neglect to replace blood loss by transfusion or infusion of blood plasma.

This survey shows that the handling of placenta previa was worse than that accorded to any other obstetric complication. The Committee avers that "It is quite clear that some curb must be placed by hospitals upon the treatment of this condition," as well as cesarean section and other operative procedures.

The following recapitulation gives an accurate idea of the adequacy or inadequacy of the care these 112 women received:

Prenatal Care
None, 7.1 per cent.
Adequate, 1.8 per cent.
Faulty but not contributory to death, 42 per cent.
Faulty and contributory, 49.1 per cent.
Total faulty care, 91.1 per cent.
Labor and Delivery Care
None, 19.6 per cent.
Adequate, 6.3 per cent.
Faulty but noncontributory, 19.6 per cent.
Faulty and contributory to death, 54.5 per cent.
Total faulty care, 74.1 per cent.
Postpartum Care
None, 25 per cent.
Adequate, 3.6 per cent.
Faulty but noncontributory, 11.6 per cent.
Faulty and contributory, 59.8 per cent.
Total faulty care, 71.4 per cent.

These figures grouped together give a graphic illustration of why these women died and how a few physicians can keep the State from realizing the ideal of irreducible maternal mortality.

We have heard much of the Maternal Welfare Movement and its objective of irreducible maternal mortality. It is interesting and encouraging to mark its progress in the nation and in Minnesota.

In 1920, when the American Committee on Maternal Welfare was organized, the Census Bureau statistics presented a sorry picture. Fifteen thousand women were dying every year in the United States.

The first fifteen years the American Committee spent in organizing the whole medical profession. One of the main objectives was to stimulate medical societies to lead in developing maternal welfare programs. These were the education years. The national maternal mortality rate did not show encouraging improvement up to 1930, when the rate was 6.7 deaths per 1,000 live births, only fractionally better than ten years before. However, there was encouragement in increased interest and activity for better maternal care.

Had not the American Committee of Maternal Welfare been composed of men with intrepid spirit, imagination, courage and faith in the movement, it might have fallen prey to discouragement. The inspiration, the most stimulating factor and the guiding leadership of this great movement has always been the American Committee of Maternal Welfare, Inc., led by our former Minnesota colleague, Dr. Fred L. Adair, chairman. The vice chairman is another of our colleagues, Dr. Robert D. Mussey of Rochester. Minnesota should be proud to have furnished such leadership. Their faith began to be justified as the 1930-40 decade advanced; by 1937, improvement was evident all over the country and by 1940, the national rate had fallen to 3.76 deaths for every 1,000 live births. The total number of maternal deaths had dropped from about 15,000 in 1930 to a little under 9,000 in 1940 (41+ per cent). The Minnesota record has paralleled the national. The number of maternal deaths in the state in 1930 was 251; in 1940, 119; in 1941, 107; in 1942, ninety-four; 1943 (tentative), eighty-five. The rate of maternal deaths in 1930 was 5.3 per 1,000 live births; in 1940, 2.2; in 1941, 2.0; in 1942, 1.6; 1943, 1.5 (tentative).

The total deaths from infection in 1930 were ninety-six; in 1940, twenty-three. Deaths from hemorrhage in 1930 were thirty-three; in 1940, eighteen. The deaths from toxemia in 1920 were eighty-one; in 1930, fifty; in 1940, forty-two; in 1941, twenty-eight; in 1942, nineteen.

The figures show that there are enough physicians practicing reasonably good obstetrics to insure a lowering death rate.

From a very modest beginning in 1912, in Boston, the movement has gradually grown into a great success. This survey is a Minnesota part of that movement. It is an effort to find our shortcomings and to try to find methods of correcting them in order that we may approach the "irreducible minimum." The analysis has certainly and specifically revealed many of our shortcomings. Now we must work out their correction as best we may:

1. By continuing and intensifying the Maternal Welfare Movement in the State.

2. By securing more consultations by co-operation of hospital staffs.

3. By using every influence and method for complete, continuous and universal maternal care, since it is quite evident that a majority of Minnesota physicians give their patients reasonably good care, as is attested by the steadily decreasing mortality rate which in 1942 was 1.6 deaths per 1,000 live births with a total of ninety-four fatalities. It is equally evident that some physicians do not live up to the requirements of good maternal care—not even up to the minimum demands. If every physician practicing obstetrics in Minnesota would satisfy the minimum requirements of good obstetric care, the number of annual maternal deaths would, in all probability be reduced by at least one-half. Indeed, if the eighty-two (73 per cent) whose deaths the survey committee declared were preventable had been saved, the number of deaths would have been only thirty for the year investigated instead of the 112 who did die.

CONSERVATIVE TREATMENT OF THE DISC SYNDROME

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THE purpose of this article is to call attention to the non-operative, or conservative, treatment of the disc syndrome, and to present a safe, simple, plan of such treatment.

During the past eight years a great many papers dealing with the inter-vertebral disc have appeared in our scientific literature. Herniation of the nucleus pulposus, protruded disc, ruptured discs, and even concealed discs, have been described so often that every physician is aware of the disc syndrome, and often patients themselves diagnose their low-back pain as due to a "slipped" disc. Although there remains some controversy regarding the simplicity of the diagnosis—whether made by the history alone, or by history and a careful physical examination, or by means of contrast media injected into the spinal canal—the entity of the herniated disc has been so publicized that it is quite generally recognized when present, and often when not present. Most of the published work upon this important cause of low-back pain has been done by neuro-surgeons, who report good results from laminectomy in about 90 per cent of their cases. Non-operative treatment is rarely mentioned, and the implication is that once a disc syndrome is diagnosed the patient should have a laminectomy.

For many years orthopedic surgeons have been relieving low-back pain, and also sciatic pain, by conservative measures, such as bed rest, immobilization, traction, manipulation and, sometimes, by spinal fusion. Many orthopedic surgeons are justly concerned with (and often troubled by), the poor results of laminectomies, especially in patients who have not had any conservative treatment prior to the operation for excision of the protruded disc.

The author has no intention of minimizing the value of the recent work done largely by neuro-surgeons in recognizing, clarifying, and treating the entity of the disc syndrome. Although the author questions the advisability of injecting opaque substances for diagnosis, and favors the combined operation (laminectomy plus spinal fusion), he also urges close co-operation between the neuro-surgeons and orthopedic surgeons in the study, diagnosis, and treatment of the disc syndrome. He concurs whole-heartedly with Adson, the master neuro-surgeon, who stated that "Surgery should be resorted to in cases when symptoms fail to subside with palliative measures."

The value of laminectomy, or hemilaminectomy, in the treatment of certain cases of disc syndrome is now well established, but *all* cases do not require such operation. The general practitioner, recognizing the symptoms and signs of the disc syndrome, seems inclined to think, "slipped disc-laminectomy," forgetting conservative measures entirely. The number of laminectomies done for the relief of the disc syndrome is rapidly increasing, and the number of patients who are worse, or no better, following laminectomy is also increasing. To date, no reports on the unsatisfactory laminectomies have appeared in the literature —probably because the dissatisfied patient seldom returns to the surgeon who operated upon him.

The operation of laminectomy, or hemilaminectomy, for the protruded or herniated portion of a disc does not prevent recurrence of the disc syndrome. Bilateral sciatic pain, annoying persistent paresthesia, and loss of sexual power following laminectomy are complications probably due to failure to secure absolute hemostasis at operation and are not the fault of the operation. But recurrence of sciatic pain and persistent back pain after laminectomy *are* the fault of the operation and indicate, in those cases where such symptoms recur, that laminectomy alone was not sufficient. The author has seen many, far too many, of such unsatisfactory results, and feels certain that too many laminectomies are being done. Since there are many unsatisfactory results, and because considerable permanent partial disability often follows laminectomy (especially in patients covered by insurance), a fair trial of conservative treatment is surely warranted *first*. Non-operative treatment can do no harm, has no serious complications, and is successful in the majority of cases.

Conservative, or non-operative, treatment, however, does not mean neglect, nor mere rest in bed during the time required for neurological examination or lipiodol studies. It *does* mean treatment directed to relieve the pain, to relax the muscle spasm, to correct the deformity, and to return the patient to useful activity. Well-planned conservative treatment, carefully carried out in proper sequence, will avoid operation in the great majority of patients afflicted with the disc syndrom. It may not suffice in all cases, and does not prevent recurrences, but neither does laminectomy unless combined with spinal fusion.

The plan of conservative treatment submitted herewith has been developed and employed by the author since 1933 when he himself sustained a "slipped disc." Similar plans have been developed by Breck and Basom, and by Eugene Regan, Walter P. Blount, Paul Steele, and others. The plan of management is simple, but must be employed in proper sequence to prevent recurrence. Patience is required of the patient, and considerable attention to detail is required of the surgeon.

1. *Bed rest.*—Absolute and continuous rest in bed is imperative. In order to accomplish this, hospitalization is indicated, as domiciliary care rarely provides absolute bed rest. A saline cathartic is advisable in most cases on admission to the hospital. Continuous bed rest in the so-called "flexed" position is maintained. This is easily accomplished in the modern hospital bed by raising the back rest to about 70 degrees, and also raising the knee rest, as suggested by Breck and Basom. The patient remains supine in this position twenty-four hours daily, except while receiving hot wet packs. The lumbar lordosis is gradually restored by rolling two folded sheets so as to provide a bolster some six inches in diameter under the lumbar spine. Every four hours—(at 8, 12, 4, and 8) the bed is cranked down to horizontal and the patient is turned prone to permit application of hot wet packs to the lower back for twenty minutes, after which he is again returned to the supine-flexed position. Narcotics may be required to relieve pain at first, but after a day or so, salicylates will usually suffice. Bathroom privileges are not permitted during this period, and the patient should not change his position for baths, to telephone, to adjust a radio, or to turn on his side. Such continuous rest, in the "physiological" position must be maintained. Whether this position opens the intervertebral foramen and allows aspiration or retrusion of the protruded portion of the disc is not important—it usually relieves the sciatic pain in a few days. The importance of continued rest in this position must be emphasized to the patient and to the nursing staff at this stage, for the "physiological" rest in the flexed position must be maintained continuously until the pain and muscle spasm subside.

2. *Control of Spasm.*—Muscle spasm usually relaxes under complete rest and the application of external heat but, if the spasm has not relaxed after a week or ten days of the above treatment, simple Buck's extension applied to both legs may relieve it. More obstinate cases may require manipulation under general anesthesia, as explained below.

3. *Correction of Deformity.*—The list of the spine and the obliteration of the normal lumbar lordosis is due to muscle spasm. With the relaxation of such spasm by absolute bed rest and by applications of external heat, the deformity usually disappears. If it persists, after a fortnight of the above treatment, manipulation under anesthesia may relieve it. Manipulation under anesthesia has been employed by orthopaedic surgeons for many years. It reached the height of its popularity under Baer twenty years ago. In *this* plan

of management, no attempt is made to carry out the Baer manipulation—the spine is merely carried gently through the presumed range of normal spinal motion after which it is immobilized in plaster.

4. *Immobilization.*—After the deformity has been corrected, splinting is indicated for a short period of continued rest in disc syndrome cases as in other surgical conditions. This is best achieved by immobilization in a plaster-of-Paris jacket. Before the patient is allowed to turn himself, or stand upon his feet, or be in a wheelchair —such a jacket is applied. This is best done with the patient upon the Goldthwait irons. His lumbar lordosis should be restored, his hips and knees slightly flexed—whether the jacket is applied under anesthesia or not. The spinous processes and iliac spines should be protected by thin felt padding. The jacket should be well molded over the iliac crests and a generous "dinner window" should be allowed; it should fit well up under the axillæ and support the extended chest. When such a well-fitting jacket has hardened, and has been trimmed and bound, the patient is ready to be ambulatory.

5. *Muscular Development.*—The patient may be ambulatory splinted in his jacket. To prevent muscle atrophy, exercises should be instituted at once. The exercises are those well known to physicians for development of the musculature of the torso—walking, carrying sacks of sand upon the head, squatting, straight-leg raising, etc. They should be carried out systematically by the patient himself, as Bohler has emphasized, increasing the daily routine until the patient admits he "feels fit." No bending, stooping, lifting, or riding in vehicles is permitted during this period. The average patient, who carries out his calisthenics conscientiously will want his jacket removed in about four to six weeks.

The transition from the immobilization of a well-fitting jacket to no support at all is too much for most patients; therefore, a light spring-steel back brace of the Goldthwait or "Boston" type is applied. Such a brace gives *some* support, and acts as a constant reminder to the patient to use his back in the correct mechanical position. At this stage proper posture and correct body mechanics are explained to the patient. He is told how to lift with his legs, maintaining the erect and correct mechanical position of his spine while lifting. Exercises to develop the musculature of the torso are again emphasized, and the patient is cautioned to avoid activities such as bending, stooping, and twisting of the low back. Most patients return to light work—and even heavy work —while protected by their braces. Later a simple sacro-iliac belt is substituted for the brace.

The above management is simple and has been remarkably successful in relieving cases of the disc syndrome in the hands of the author over a considerable period of time. Recurrences obtain, of course, but usually in patients whose spines present congenital mechanical instability. Laminectomy, or hemilaminectomy, is indicated in cases of intractable sciatic pain after, and only *after,* a fair trial of conservative treatment; and probably laminectomy should be combined with spinal fusion for lasting relief. Some permanent partial disability often obtains in most cases of the disc syndrome, either from the residuals of operative treatment or from the restricted activity necessary to prevent recurrence; such disability may obtain whether treatment is conservative or operative.

Conclusions

1. Conservative treatment relieves most cases of the disc syndrome.

2. A simple plan of conservative treatment is persented which should be given a thorough trial in all cases before operative intervention.

SPONGES OF FROZEN STARCH FOR SURGICAL USE

The use of sponges of frozen cornstarch for internal surgical dressings that can be left in the body when the surgeon sews up the operative wound is suggested by Claude W. Bice, M. M. MacMasters and G. E. Hilbert, of the U. S. Department of Agriculture Northern Regional Research Laboratory (*Science,* Sept. 8).

The starch sponges could also be used to introduce medicinals such as penicillin and sulfa drugs into the body during operations, they suggest.

The sponges would be slowly dissolved and absorbed in the body and the medicinal substance at the same time would be slowly released, the scientists believe, on the basis of tests of the studies in beef serum.

The sponges are highly absorbent and, unlike cotton, they are firm enough to hold absorbed liquid during gentle handling.—*Science News Letter,* September 16, 1944.

INJURIES OF THE URINARY TRACT COMPLICATING FRACTURES OF THE PELVIS

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INJURY of the bladder or deep urethra should be suspected in all cases of fracture of the pelvis. Though gross injury of the urinary tract is not a very common complication, still failure to recognize and deal with it promptly is sure to be disastrous.

Demonstration of, or failure to rule out rupture of the bladder or deep urethra demands prompt suprapubic drainage of the bladder and perivesical tissues. Prompt cystotomy is less dangerous than watchful waiting; too much time must not be spent on diagnostic efforts. I have occasionally had difficulty in convincing physicians of the importance of this concept. That is the principal reason for my presence on this program. With a patient in shock and suffering from serious fractures of the pelvis and perhaps of other bones, and also perhaps with evidences of cerebral or other visceral injuries, one naturally seriously considers the risk of added surgery. However, one must realize that the opportunity may have passed within a few hours, leaving only the certainty of a fatal outcome.

Among 103 consecutive cases of proved fracture of the pelvis treated at the Minneapolis General Hospital in the last five years, gross injury of the urinary tract occurred in twelve cases, and there was an unexplained hematuria in thirty other cases. Of the twelve cases, two had rupture of the bladder, three had rupture of the posterior urethra, and two had definite renal injuries. Meredith Campbell[2] reported that, among 116 cases of pelvic fracture at Bellevue Hospital, New York, he found a ruptured bladder in sixteen cases, and ruptured posterior urethra in three other cases.

Diagnosis of urinary tract involvement depends mainly on the history and physical findings, supported by intravenous urography, or catheterization and cystography with an organic iodide solution, such as skiodan or diodrast or neoiopax. There will be the history of a fall from a height, an automobile accident, or crushing between large objects or a cave-in. The victim will be seen to be in shock, with pain in the region of the pelvis and lower abdomen. He may have voided bloody urine or he may have been unable to void. If he has not voided he should not be encouraged to void. There may be an indefinite mass in the suprapubic region, and there may be a doughy mass in the region of the bladder and prostate as felt by rectum or bimanually. There may be rigidity of one flank in case of renal injury. Deformities due to the pelvic fracture may be noted, especially if there is combined injury of the iliac and pubic parts of the pelvic girdle with displacement.

While combatting the initial shock, intravenous urography may be undertaken as soon as the blood pressure is high enough to ensure renal function. If not satisfied, a soft rubber catheter may be cautiously passed, recognizing that the findings may be inaccurate and very misleading—the catheter may become plugged with clots and fail to drain the bladder; the fluid obtained may be extravasated urine from within or outside the peritoneum; an area of bladder wall may be crushed with several minute perforations without greatly disturbing the apparent bladder capacity. Injection through the catheter of two or three ounces of an organic iodide solution may immediately establish the diagnosis; the use of air or sodium iodide is not recommended. I feel that cystoscopy is too dangerous and would usually be useless.

Rupture of the bladder or urethra being suspected or demonstrated, the extent of the operation for suprapubic drainage may vary in accordance with the patient's condition, and need not appreciably increase his hazards; it may be done under local anesthesia. The midline suprapubic incision is made. A small incision is made in the peritoneum, and is immediately closed if there is no evidence of intraperitoneal injury or free urine. Any free urine is aspirated and any visceral injury dealt with before closing the peritoneum. The bladder is then opened extraperitoneally, foreign bodies removed, and large perforations closed if, and in so far as the patient's condition may warrant. The main perivesical clots and

From the Department of Urology, Minneapolis General Hospital. Read at the annual meeting of the Minnesota State Medical Association, Minneapolis, Minnesota, May 17, 1943.

urine collections are evacuated quickly, if time permits, and penrose drains placed. The cystotomy incision is closed to a large (35-45F. or larger) drainage tube. That last is the essential feature of the operation.[3,6]

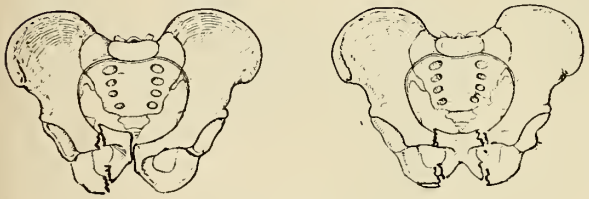


Fig. 1.

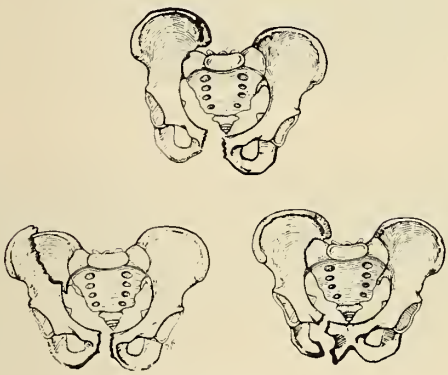


Fig. 2.

If the injury has been a severance of the posterior urethra, and if the patient's condition warrants the expenditure of the time needed, then the ruptured urethra may be put into line by a catheter passing out through the penile urethra or through a perineal urethrotomy as has been described by various authors.[1,4,5,7] I feel that traction is not needed, since intra-abdominal pressure will approximate the torn edges if guided by a catheter and in the absence of interposed clots or other foreign material.

Fractures, single or multiple, of the pubic (anterior) segment of the pelvic ring cause little displacement and no shortening or altered alignment of weight bearing (Fig. 1). In the absence of visceral complications these factures need only recumbency on the back for five or six weeks. In fractures involving both pubic (anterior) and iliac (posterior) segments of the pelvic ring there is a considerable displacement of one side, carrying with it the lower limb, and causing deformity and shortening (Fig. 2). Many types of treatment have been used with the patient lying on his back during treatment. I have seen the failure of several of these methods. I am inclined to agree with Watson-Jones[8,9] that "the key to successful reduction is the position of lateral recumbency," as shown in Fig. 3 taken from his article. He feels that the double plaster spica should be placed about a week or ten days after the cystostomy, when leakage can be prevented or controlled.

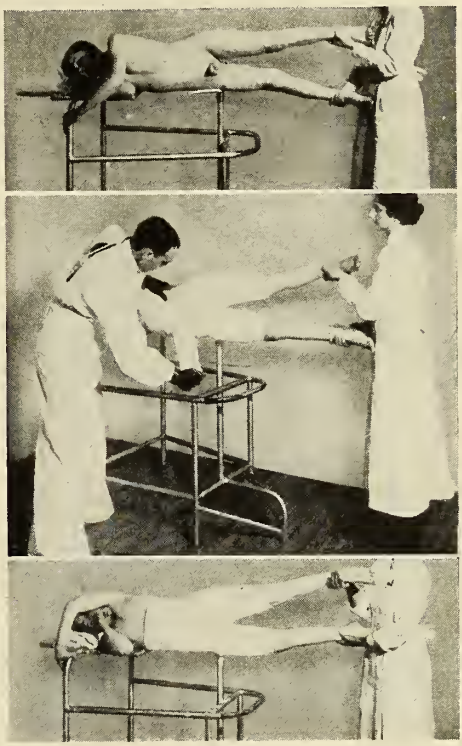


Fig. 3.

Consideration of the following case summaries will illustrate some of the problems probably better than further abstract discussion.

Case 1.—A man, 42 years old, fell from a second-story hotel window. He reached the hospital in shock, having a premonition of death. He was unable to void. His abdomen was distended and the lower abdomen was rigid. X-ray showed fractures of the pubic (anterior) segment of the pelvis. Catheterization obtained 22 c.c. of "bloody urine;" 100 c.c. of saline was injected and none returned. The catheter had been passed without difficulty. Rectal examination had not found any bogginess at the prostate. Intravenous urography showed a normal upper urinary tract, but a small bladder with irregular vault. Spacing between loops of bowel should have suggested free fluid in the



Fig. 4.



Fig. 5.



Fig. 6.



Fig. 7.

peritoneal cavity. Certainly there was enough evidence to warrant cystostomy. Two hours later, 800 c.c. of fluid was obtained by catheter, and for that reason a perforation of the bladder was thought unlikely. There was no explanation of such a finding, and it did not fit in well with the intravenous urogram, which seemed to show a filled but small bladder. Three hours later, still another 300 c.c. of "bloody urine" was obtained by catheter, and nothing returned when fluid was injected. Again cystostomy was clearly justifiable. When I first saw the patient fifteen hours after he was admitted, the patient had pulled out the catheter. When it was replaced, fluid was obtained only when the catheter was inserted much farther than usual, and then there was no odor of urine. Fluid injected did not return completely. Injection of air through the catheter obliterated the area of liver dullness and only fluid returned from the catheter. X-ray with the patient sitting showed air under the diaphragm. Operation was performed then. Over 500 c.c. fluid was aspirated from the peritoneal cavity, intraperitoneal and extraperitoneal bladder ruptures were repaired, the perivesical tissues drained by penrose drains, and a suprapubic tube drain placed in the bladder. The patient died about



Fig. 8.



Fig. 9.

thirty-nine hours after his injury. Autopsy showed fractures of the pelvis, ribs, and wrist, multiple superficial injuries, petechial hemorrhages of the brain and bronchopneumonia; there was no evidence of peritonitis. Thus there were other sufficient causes of death aside from the rupture of the bladder, but it is still evident that treatment of the ruptured bladder was unnecessarily and dangerously delayed.

Case 2. This man, fifty-two years old, walked out a third-story hotel window in his sleep and was picked up several hours later when he had recovered consciousness. X-ray showed fracture of the right ilium and right sacroiliac joint and a dislocation of the symphysis pubis with marked displacement—the type of injury emphasized recently by Watson-Jones. The cystogram showed extraperitoneal rupture of the bladder and extravasation (Fig. 4). Suprapubic cystostomy was done within six hours after admittance, with repair of a tear of the anterior wall of the bladder from urethra to vertex, and with placing of Kitschner wires in both tibiæ at the same time. X-ray after one month showed failure of traction to reduce the displacement of the pelvic bones. The bladder healed well, and the patient left the hospital in about fourteen weeks.

Case 3. A woman of uncertain age fell about 15 feet to a concrete floor. She suffered a number of fractures including fractures of the first and second lumbar vertebræ, both rami of the right pubis and the right wing of the sacrum. The associated hematuria strongly suggested bladder injury, and cystostomy was recommended. However, in the operating room, fluid used for irrigation of the bladder returned completely and was promptly free from blood. Cystogram, made with an organic iodide solution, showed no extravasation, but only displacement of the bladder toward the left (Fig. 5). Therefore, it was felt that the displacement was due to a hematoma at the site of the pelvic fracture, and that the hematuria was more probably due to kidney injury which could be further best studied by intravenous urography. Intravenous urography a few hours later showed mild but definite injury of the right kidney with displacement of the right ureter and bladder. Repetition of the intravenous urography twenty four days later showed no abnormality.

Cases 4 and 5. A man and his wife both suffered ruptures of the posterior urethra when their car slid off the road in February. Immediate suprapubic cystostomy was performed on the man before he was sent to Minneapolis. The intravenous urogram after he came here (Fig. 6) showed the typical upward displacement of the bladder. His wife had no elevation of the bladder (Fig. 7). Her injury involved both bladder wall and urethra and blood and urine escaped through a tear in the anterior vaginal wall.

These two cases illustrate also the importance of

other lesions in arriving at a prognosis. The man had serious hypertensive renal damage which had previously brought him to the verge of uremia; he finally died in uremia. His wife had previously lost one kidney. In this accident there was delayed recognition of an injury of her pelvic colon and she finally died of infection spreading from the bowel to the retroperitoneal tissues and the buttock.

Case 6. A man, forty-six years old, in an automobile accident, suffered fractures of both pubic bones (Fig. 8) and fractures of the third and eighth right ribs with hemothorax. Cystostomy and perivesical drainage was done within 2.5 hours after admittance but his condition did not permit any further procedures. Seven transfusions were given within six days. Twenty-two days after the injury the torn urethral segments were brought together by passing a sound through the urethra with guidance of a finger in the bladder through the cystostomy wound and an assistant's finger in the rectum. Expecting that there would be some separation of the urethral segments, a sound with the long double Béniqué curve was first tried but would not pass. Then it was found that a sound with the ordinary short curve could be passed easily. Thereafter a soft rubber catheter with several extra openings was easily introduced similarly on a metal guide and was retained by a thread from its tip through the suprapubic wound to the skin, where it was attached by adhesive. Further convalescence was uneventful.

Case 7.—A boy, nine years old, was run over by an ice truck. He arrived at the hospital in a severe state of shock with tympanites and a palpable bladder. An intravenous urogram showed an elevated bladder with a considerable abnormal space between the bladder floor and the symphysis pubis. Cystostomy alone was then done, followed twelve days later by catheter drainage through a perineal urethrotomy. Six days still later the suprapubic tube was removed. After another thirteen days the perineal catheter was replaced by a catheter passed normally through the urethra. After still another twelve days (forty-four days after the injury) he voided normally. In the four and one half years after the injury up to April, 1943, dilatations of the urethra were needed at times but progressively less often. In April, 1943, he was voiding perfectly well, but there was an unexplained occasional difficulty in passing sounds or even filiform bougies. Intravenous urography showed no abnormality excepting persistence of the abnormal elevation of the bladder floor. An oblique urethrocystogram explains the difficulty by demonstrating an abnormal blind pocket at the site of injury (Fig. 9). Since he voids well and since the lumen of his urethra has grown with his general growth we hope that further instrumentation may be unnecessary.

Summary

Injury of the bladder or deep urethra, while not a common complication of fractures of the pelvis, requires prompt recognition and early surgical treatment to avoid disaster. Suprapubic cystostomy with drainage of the perivesical tissues is the essential part of the treatment. Exploratory opening of the peritoneal cavity should be a preliminary step in the operation. If the patient's condition permits, tears in the bladder should be sutured or the torn urethra brought into line by means of a catheter.

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INFLUENZAL MENINGITIS

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HEMOPHILUS influenzæ was first described by Pfeiffer in 1893, and the first authentic case of influenzal meningitis was reported by Slawyk in 1899. Since that time the incidence of the disease has undergone a seemingly steady increase, which may be more apparent than real, however, because of improved diagnostic techniques and ability.

Hemophilus influenzæ has been ranked by various authors from first to third in incidence as a bacterial cause of meningitis in children, and by many has been given fourth place as a cause of meningitis for all ages combined. Fothergill and Wright[6] have pointed out that the increased incidence of this disease between the ages of two months and two years is best explained by the

bactericidal power of the blood for the meningitic strains of the influenza bacillus. Below the age of two months this power is high, presumably because of passive immunity transmitted from the mother. Between the age of two months and three years the blood has comparatively little bactericidal power, but after this age there is a gradual increase in acquired immunity.

It is not surprising, therefore, that the greatest mortality in this disease occurs between the ages of two months and two years. Until recently the mortality was between 90 and 100 per cent. In 1934 Neal[7] presented a study of one hundred eleven cases with four recoveries. In 1940 Aleman[1] collected from the literature 478 reports of cases under two years with a 97 per cent mortality. With more refined methods of early diagnosis and treatment this appalling mortality is in the process of being remarkably lowered although we are presumably dealing with the same organism with the same virulence as these earlier reports. Alexander[4] reports a mortality of 24 per cent in her series of seventy-five cases treated with rabbit antibody and chemotherapy.

Etiology

Pittman[8] has been largely responsible for working out the Smooth and Rough forms of H. influenzæ and demonstrating on the Smooth forms a capsule, which she suggested might contain the specific soluble substance analogous to that produced by pneumococcus. The organisms of the Smooth and Rough forms are morphologically indistinguishable, both showing the same remarkable pleomorphism so characteristic of H. influenzæ and probably so often confusing the diagnosis. It has also been shown[7] that the meningeal strains differ culturally and serologically from the throat strains of H. influenzæ. The throat strains are usually the benign Rough form except in cases of influenzal meningitis, in which the virulent Smooth forms may be cultured from the throat. Subsequently Pittman demonstrated two immunological types of the organism, called *A* and *B*, of which *B* is so much the commoner in the etiology of influenzal meningitis that for practical purposes type A may be disregarded. The type B organism is diagnosed by capsular swelling when mixed with type B antiserum according to the Neufeld technique.[2] This swelling is less pronounced than in the case of the pneumococcus, but is none the less distinct.

There has been much discussion as to the value and dangers of spinal puncture. Certainly it is indicated to establish the diagnosis, and even daily punctures to ascertain the course of the disease are not unwarranted and are even recommended.[3] Arguments for "spinal drainage" are less tenable, however. Withdrawing spinal fluid in amounts greater than needed for diagnosis and following the course of the disease is believed by some to favor the formation of adhesions around the brain stem with ensuing hydrocephalus. Others have felt that, since sulfonamides are ineffective in the presence of pus, spinal drainage is indicated. Present-day treatment places a different emphasis, however.

Treatment

Many different types of treatment have been used in this disease, but the most popularly agreed upon now are serum and sulfa therapy. Wollstein first used goat serum to protect monkeys in experimental infections. In 1932 Ward and Fothergill[11] proposed that the previous failure of serum in influenzal meningitis was in part due to the lack of complement in the spinal fluid in that disease in contrast to meningococcic meningitis, where higher levels of spinal fluid complement are found. Accordingly they suggested the use of complement intraspinally along with serum. Anti-influenzal horse serum has been used by various workers since 1920, but in 1933 Pittman[10] developed type specific horse antiserum, which in more recent years has been largely replaced by rabbit serum[2], which has a smaller anticarbohydrate molecule and is believed to have greater powers of tissue penetration and absence of the prozone phenomenon. This rabbit serum produced commercially by E. R. Squibb and Sons is now freely available at the Division of Preventable Diseases, Minnesota Department of Health, Minneapolis. The older method of treatment with complement and the serum available at that time gave none too good results, and has been largely replaced by newer methods. Before the advent of sulfadiazine, sulfapyridine was believed the most effective in this disease; and a newcomer, sulfamerazine, is now being hailed. Sulfadiazine is, however, the most thoroughly proved drug.

Alexander, who has established a very plausible plan of therapy[3], advocates immediate sodium sulfadiazine intravenous drip therapy to establish

a blood level of at least 10 mgm. per cent in order to achieve bacteriostasis first of all. Large amounts of normal saline or Ringer's solution are simultaneously given in the infusion in an attempt to wash out through the kidneys the carbohydrate specific soluble substance, which is the toxic material released by the organisms and found in the body fluids. Subsequently antiserum is added to the infusion and given slowly in amounts which vary inversely with the level of spinal fluid sugar. In this way less antiserum is required, because there is less specific soluble substance in the body fluids to unite with it. The slow intravenous administration is believed necessary because of the possible shocking effect of the sudden union of large amounts of antibody and antigen—an effect reduced also by giving large amounts of intravenous fluids. It is recommended that one hour and twenty-four hours after completion of serum therapy capsular swelling be tested by adding the patient's serum diluted 1:10 to a suspension of the organism in the spinal fluid (which may be saved for eighteen hours before capsular breakdown occurs). Only if capsular swelling is absent, is further serum therapy indicated. If there is no response to intravenous treatment within forty-eight hours, anti-influenzal serum should be administered intrathecally.

Experience at Ancker Hospital

The experience of the Contagion Service of Ancker Hospital with Hemophilus influenzæ meningitis has in general reflected the experience of those elsewhere. For the six years from 1938 to 1943, inclusive, the bacterial etiological incidence for meningitis of all ages was as follows: (1) meningococcus (twenty cases); (2) tubercle bacillus (sixteen cases); pneumococcus and hemophilus influenzæ follow with nine cases apiece. In this same group of cases the bacterial incidence below two years of age found Hemophilus influenzæ in first place with seven cases; second was pneumococcus (four cases); and third meningococcus (three cases). The tubercle bacillus caused only one case.

Of the nine cases of influenzal meningitis at Ancker Hospital in the past six years there have been only two recoveries. One of these was a four-year-old white female, who was treated with neoprontosil and repeated spinal drainage, and eventually recovered after a six-month hospital stay. The only other recovery in this series is the fourteen-month-old girl whose case is described below. Only one other patient was treated with specific serum (not until late in the disease), and that one died. Of the influenzal group autopsy was performed in all fatal cases, and all were proved by direct smear and culture either during the hospital stay, at autopsy, or both.

Case Report

V. L., a fourteen-month-old white, female child, was admitted to Ancker Hospital on November 28, 1943. There was a two-day history of fever, irritability, persistent vomiting, and a slight cough; and the baby had shown a tendency to lie in the opisthotonos position. Two weeks prior to admission she had had a running right ear. Physical examination revealed an acutely ill, lethargic infant with a rectal temperature of 103 degrees. Nuchal rigidity was only slight, but neck retraction was present. The Brudzinski sign was strongly positive. Routine blood examination revealed a hemoglobin of 10.6 Gms., a leukocyte count of 9,150 with 65 per cent polymorphonuclears, and 25 per cent lymphocytes. An admission chest x-ray examination was essentially negative. Spinal puncture performed on admission revealed a slightly turbid fluid with a pressure of 30 cm. of water, 920 cells per cu. mm. with 95 per cent polymorphonuclears, one plus Pandy reaction, and 40 mg. per cent sugar. The fluid revealed H. influenzæ type B on smear and culture at both the Ancker Hospital laboratory and the Division of Preventable Diseases, Minnesota State Department of Health.

Sulfadiazine was begun immediately by mouth, and twenty hours after admission a continuous intravenous infusion of sodium sulfadiazine and normal saline was begun at the rate of 0.1 Gm. of sodium sulfadiazine per kilogram of body weight for the first four hours. During the next two hours 50 mgm. of antibody nitrogen—two ampoules—of anti-Hemophilus influenzæ type B rabbit serum were run in slowly intravenously. The continuous intravenous drip was continued another sixteen hours with sodium sulfadiazine dosage reduced to 0.02 Gm. per kilogram of body weight added to the infusion at four hour intervals.

Shortly after the infusion was discontinued, the child was obviously much improved. Sulfadiazine was continued by mouth at the rate of 0.35 Gm. per kilogram (2.5 grains per pound) per twenty-four hours, which maintained a blood level of 11.8 mg. per cent. Other therapy included postural drainage, vitamin supplements, and one whole blood transfusion. The child continued to improve, although there developed an arthritis of the right elbow, which had subsided by the twelfth hospital day. At no time did the rectal temperature exceed 103 degrees F. On the ninth, tenth and eleventh hospital days the temperature gradually rose to reach 102.4 degrees F. on the eleventh hospital day, when a faint, generalized, erythematous, macular rash was observed. On the supposition that drug fever had developed, sulfadiazine was discontinued, and twelve hours later the temperature had dropped to normal,

where it remained for the eleven succeeding days of the hospital stay. On the twenty-second hospital day the spinal fluid was entirely normal, including negative smear and culture, and the patient was discharged. During her hospital stay she received a total of five spinal punctures, about 5 to 7 c.c. withdrawn each time. There was no change noted in her condition following any one of these punctures.

She was again admitted to Ancker Hospital on February 23, 1944, for an upper respiratory infection, and was discharged as recovered eight days later. At this time the only recognizable stigma resulting from the previous meningitis was what appeared to be a nerve deafness.

Conclusions

1. Hemophilus influenzæ is generally ranked from first to third in incidence as a bacterial cause of meningitis in children, and is especially common between the ages of three months and two years.

2. The mortality rate of this disease, previously close to 100 per cent, is now in the process of being remarkably lowered by modern methods of early diagnosis and improved therapy.

3. These methods include sulfadiazine as the most thoroughly proved drug (although sulfamerazine is now also recommended) and anti-Hemophilus influenza type B rabbit serum.

4. Ancker Hospital statistics and the case of a fourteen-month-old infant successfully treated with sulfadiazine and serum are presented.

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PRACTICAL POINTS IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS

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TWENTY-FIVE or thirty years ago, all too often a patient was told he did or did not have tuberculosis when the diagnosis was based wholly on his appearance. Today, with the advances that have been made in medicine, short cuts are frequently attempted and often a patient is told he has or does not have tuberculosis from an x-ray alone. To attempt to diagnose clinical tuberculosis from an x-ray alone is no more justifiable or forgivable than it was to tell a patient that you could look at him and tell him he did not have tuberculosis or, if he was emaciated, had a hectic appearance and hacking cough that he was a victim of this disease. One cannot deny the value of the x-ray in the diagnosis of tuberculosis, for it has been the greatest aid we have; but it is only an aid and should be used with other means at our command before a definite diagnosis is made. If the correct diagnosis is to be made as early as possible it is necessary to use all the means at our command for both the best interest of the patient and our professional reputation.

The fact cannot be denied that even today too many cases are reaching a far advanced stage before being discovered, and when a single means of diagnosis is being relied on, too many are being diagnosed as tuberculosis when such is not the case. It should be well understood that the x-ray, like physical signs, tells what has taken place rather than what is taking place. It is not a matter of coming events having cast their shadow but rather of past events having cast their shadow. One is naturally interested in knowing what is taking place at the time of examination

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for in that way only can one differentiate clinically active disease from that which has left its shadow and may at the time be clinically inactive.

The Army cannot be commended too highly for having all inductees x-rayed, but at the same time there is room for criticism in the number that have been diagnosed tuberculous and discharged when there is no active tuberculosis present or the shadow is due to some other condition. One will agree they should not remain in the Army if the x-ray shows a shadow suggestive of present or previous pathology of tuberculosis. Even though it may be a healed condition he should not remain in the service for there would be a danger of an inactive case breaking down as a result of strenuous duties and irregular life and thus endangering his own life and others with whom he may associate. These men are often in need of further study to determine the exact condition that caused the x-ray shadow. I have been consulted by a number after their rejection, some of whom had been told the disease was active and had been advised to have sanatorium treatment when the disease was not clinically active. The shadow in other cases was due to conditions other than tuberculosis. Certainly such a circumstance is not good for either the patient or the reputation of the medical profession. Mistakes are excusable, for all of us make them, but they are not so easily overlooked when only one means of diagnosis has been used.

Much progress has been made in the last few years not only in the diagnosis of tuberculosis but also in its prevention. Most of us appreciate the fact that if tuberculosis is to be discovered in its early stages one has to look for it. It is my opinion that the physicians of Meeker county are making medical history in the work they are doing in going out and looking for the disease. It is a demonstration that will be most productive by showing the way that others may follow with profit. Naturally the most fertile field for finding tuberculosis is where there has been family contact, and the importance of examining family contacts cannot be stressed too strongly. There are naturally many individuals who develop the disease when there is no history of family contact. These cases are as important to discover early as are the others, both to give them the best chance to recover and also to protect those with whom they may associate.

One thing is necessary to produce tuberculosis, namely, the presence of living germs of this disease in the body of the individual. Fortunately in the midwest a comparatively small number of persons harbor living germs of tuberculosis. Probably less than 30 per cent of the citizens of this locality harbor living germs in their bodies. It is highly important to learn who has them and who does not. We have a test that can be used for this purpose—the Tuberculin test. It is probably the most reliable test we have in medicine when properly done with potent tuberculin of proper dosage and correctly read. By the use of the tuberculin test it can be shown that at least two-thirds of the citizens do not have living germs of the disease in their bodies. The other third comprises the group of active and potential cases of tuberculosis which should be given careful consideration and study. The tuberculin test is of value only in detecting those who have living germs of tuberculosis in their bodies. The next thing is to find out if the germs are causing trouble. Here the x-ray is of the greatest value in showing what has taken place, especially in the lungs. If the x-ray shows a shadow it is necessary to make further study to determine if the case is clinically active. Here is where other means have to be brought into play, such as study of history, symptoms and use of laboratory facilities. Frequent sputum examinations should be made to determine whether or not the patient is discharging germs of the disease. The importance of finding germs cannot be emphasized too strongly for if they are present one has to consider not only the patient's condition but also the danger to those with whom he may associate. The patient who is discharging germs of the disease should be isolated and the proper treatment instituted suited to his clinical condition.

I will not attempt to take up the symptoms of tuberculosis in detail which for the most part may be vague or indefinite and simulate those produced by other diseases. It is important that they be studied carefully in connection with those produced by other diseases in order to arrive at a correct diagnosis. Pleurisy is a common symptom and should never be overlooked or passed off lightly but should be considered due to tuberculosis until proven otherwise. The same is true of hemoptysis. However, many such cases are due to causes other than tuberculosis, and it is highly important that the real cause

be learned if possible before the patient is dismissed with the statement that the symptoms are of no definite significance. Other common symptoms of tuberculosis such as elevation of temperature or pulse rate, tired feeling, emaciation, cough, expectoration, loss of weight and many others may be produced by conditions other than tuberculosis. Naturally every effort possible should be made to discover the real cause rather than simply to conclude they are due to tuberculosis. It is a serious thing to tell a patient he has tuberculosis, causing him to give up his position and take the cure when it is not necessary. It may be the cause of spoiling a patient's life. Although clinically-active tuberculosis is conclusively proven, the fact that other diseases may be present should not be overlooked, and every means used to detect them so that proper treatment can be instituted at the earliest possible moment.

We have made progress both in the diagnosis, treatment, and in markedly lowering the death rate from tuberculosis; but a victory has not been won, and until then we must continue on the job using the best and most practical methods to discover tuberculosis as early as possible, not only for the best interest of the patient but the protection of others. It cannot be emphasized too strongly that the success will depend largely on the family physician, who is the most important factor in the tuberculosis campaign.

Following all great wars there has been a marked increase in tuberculosis, and although everything possible is being done to prevent men with tuberculosis from getting into the army, it must be remembered that they will be exposed when they enter those countries where the tuberculosis death rate is high, and no doubt many will return and break down later. Every effort possible should be made to keep the number at a minimum. Regardless of how good a job the army does there will be much left for those on the home front to do after these boys return and it is my hope we will not fail to fulfill our duty.

The purpose of this paper is to encourage the use of all means at our command in order to make a correct diagnosis at the proper time. It cannot be done by relying only on one or two of the many available means.

VALUE OF DRUGS IN TUBERCULOSIS

Promin, Diasone, Promizole and certain related compounds appear to possess in varying degree the ability to restrain development of experimentally-induced tuberculosis in guinea pigs. It is recognized that this offers many contrasts with clinical tuberculosis in humans, even though the causative organism is the same.

Clinical and roentgenological data so far made available are as yet inadequate both quantitatively and qualitatively to permit, even tentatively, a positive evaluation of the curative effects of such drugs upon tuberculosis in human beings. Until controlled studies of adequate scope have been reported it is recommended that none of these drugs be used for treating tuberculous patients except under conditions which will add to our knowledge of their clinical action, and in the presence of adequate facilities to protect patients effectively from their potentially serious toxic effects. Patients and physicians must be reminded of the Federal regulations which prohibit distribution of a drug in the experimental phase of development to other than research institutions to which the material is assigned by the manufacturer for either laboratory or clinical investigation.

Any use of chemotherapeutic agents in the treatment of tuberculous patients must, therefore, be regarded as a purely clinical investigation. It must be emphasized that such use is not without hazard and that the roentgenological and clinical evidence reviewed gives no justification at this time for more than a critical interest in the value of these drugs in patients.—Report of Committee on Therapy, American Trudeau Society, Amer. Rev. Tuber., April, 1944.

CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

Arthur H. Wells, M.D., Pathologist

Presentation of a Case

Dr. C. H. Mead: This thirty-five-year-old, severely kyphotic white male was admitted to the hospital slightly over one month before his death complaining primarily of abdominal pain. The onset of this pain was gradual beginning two and one-half days prior to admittance, following a meal of rutabagas. There was a dull aching constantly in his epigastrium with a superimposed intermittent crampy and colicky type of pain occurring in attacks which were becoming progressively more severe and more frequent. The pain was exaggerated by activity and was only slightly relieved by rest. There was no radiation to the back or thighs. There had been no defecation since the onset and very little flatus. Constant nausea and increasingly frequent emesis was noted. He was vomiting everything taken by mouth. There had been several similar attacks on previous occasions and these had come on after eating apples or rutabagas. Cooked apples did not bother him. On previous occasions the attack would last for a day or two and then gradually subside; however, on this occasion his condition had become progressively worse and he decided to see a physician for the first time. He had become severely kyphotic following an injury in infancy. Except for his deformity and the symptoms listed he considered himself in fairly good health and had had no recent illnesses. The past history of systems was entirely irrelevant. The patient had taken a large dose of epsom salts the morning of admission to the hospital. Much of this had been vomited. He had had daily bowel movements until the onset of the abdominal pain.

He was writhing about the bed with abdominal pain. His temperature was 99.4° F., pulse 100, respiration 18 and blood pressure 120/80. His teeth were very carious and there was serious malalignment probably resulting in poor mastication. The kyphotic deformity was of a most severe grade. There was marked epigastric and right side abdominal tenderness with muscular spasm, rigidity and three plus rebound tenderness. The abdomen was markedly distended, tympanitic over the entire abdomen above the level of the umbilicus. The tenderness extended from the epigastrium to the right upper quadrant. The left upper quadrant was soft and not tender. Slight borborgamy was heard in the right epigastrium. The white blood cell count was 36,000 with 85 per cent neutrophiles. An x-ray "flat plate" of the abdomen revealed no evidence of obstruction of the intestines.

Confronted with this history, extreme skeletal deformity, physical findings and laboratory data, I felt that the patient was suffering from an acute intestinal obstruction resulting from some marginal mechanical and recurrent mechanism very likely dependent upon his deformity. Working on this same theory, Dr. Earl Barrett who first saw the patient found that it gave him relief to assume a knee-chest position. However, it became obvious to Dr. Barrett and myself that surgical intervention was mandatory. Under ethylene and drop ether anesthesia and through an upper right rectus incision there was found a tremendous pressure in the upper peritoneum exerted by a dilated stomach. It had been impossible to pass a stomach tube preoperatively and a second attempt was again unsuccessful during the operation. The stomach was aspirated with a trocar and fluid was removed. There was no distension of the small or large intestines and no other pathology was noted in the visible and palpable parts of the abdominal cavity. A catheter was pushed through the pyloric valve far into the duodenum to a point where it would not pass and sutured into position. It was brought out through the omentum and a stab incision in the lateral aspect of the abdomen. The anesthetist was unable to get any evidence of blood pressure preoperatively or during the operation, and the pulse could not be felt excepting on occasions when it was very weak and thready and then the rate was noted at from 114 to 140. The tremendously dilated stomach contained approximately 2500 c.c. of yellowish fluid and large masses of vegetable matter (apparently rutabagas) were scooped out of the duodenum through the pyloric valve. The patient's condition was such that any additional surgery may well have been fatal.

Considering his extremely poor condition on the operating room table the patient was in good condition on the first postoperative day and showed gradual improvement thereafter. It soon become obvious that the duodenum was obstructed and that none of the fluid taken by mouth was passing through it. It simply ran out through and around the tube left in the duodenum. His temperature and pulse returned to normal and he began regaining his strength, being fed entirely by intravenous drip method. At the end of one month postoperative care the patient was anxious to go home and he appeared in excellent condition.

A second laphorotomy was performed with the hope of short circuiting about the site of obstruction. However, the patient's blood pressure again fell to zero before the operation was started. A hasty exploration

revealed an obstruction at the point where the duodenum, vertebral column and superior mesenteric arteries come together. A Witzel type of enterostomy was performed below the obstruction and the abdomen quickly closed. The patient appeared satisfactory on the first postoperative day but rapidly lost strength thereafter to die on the third postoperative day.



Fig. 1. Mounted liver, pancreas, duodenum, mesenteric vessels and loops of small intestines.

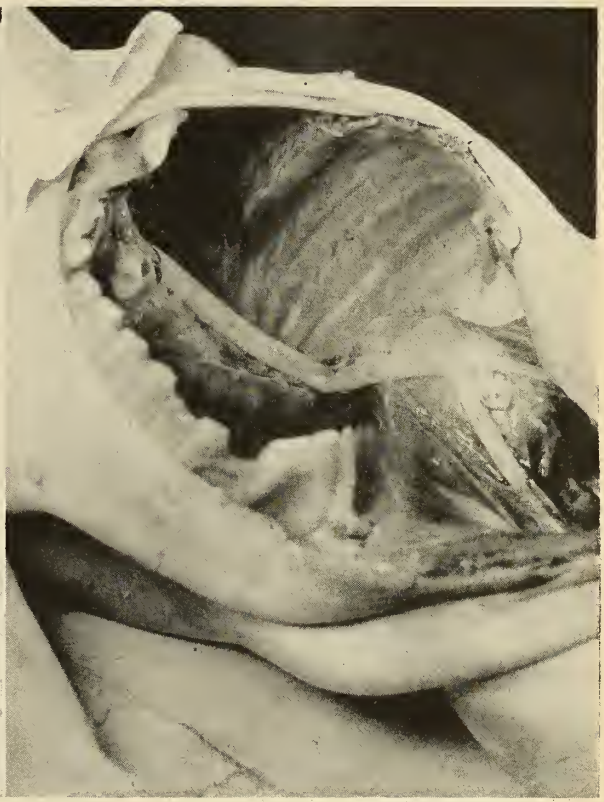


Fig. 2. Severe kyphotic deformity with prominence of the lumbar vertebrae.

Autopsy

Dr. A. H. Wells: The patient's immediate cause of death was an acute generalized peritonitis due to a mixed bacterial culture of uncertain origin, but probably from the lumen of the jejunum or duodenum which were opened at the time of the last operation. A site of obstruction was found where the superior mesenteric artery crosses the duodenum directly overlying the vertebral column (Fig. 1). There was a most severe kyphosis (Fig. 2) which resulted in a remarkable prominence of the bodies of the lumbar vertebrae in this part of the abdomen accentuating the tendency for pressure of the superior mesenteric artery upon the duodenum. Furthermore, the superior mesenteric artery was under considerable tension because the loops of small intestine were displaced into the pelvis by the marked deformity and prominence of the vertebral column. There were a few thin fibrous adhesions which tended to fix the last part of the duodenum high in the abdominal cavity thus holding the duodenum in place even though they did not significantly decrease the size of the lumen. The liver, pancreas, superior mesenteric vessels, and loops of small intestines have been mounted in Figure 1. There was only mild dilatation and no hypertrophy of the duodenum. The stomach walls were moderately hypertrophied and its cavity moderately large. The bodies of the mid-dorsal vertebrae were badly deformed but there was no evidence of tuberculosis or apparent etiology of the kyphosis. There was no tuberculosis evident in the lungs.

Discussion

Dr. A. H. Wells: Man is predisposed to an obstruction of his duodenum as a result of pressure of the superior mesenteric vessels upon the duodenum by virtue of his upright position. In four-legged animals this pedicle of mesenteric vessels drops horizontally from the spine and therefore it has no tendency to interfere with the duodenum. The subject of chronic duodenal obstruction has received a great deal of discussion in the surgical literature including work by Bloodgood[1,2], Wilkie[9,10], Robertson[6], Waugh[8], Higgins[3], Kellogg and Kellogg[4], Stavely[7], and McGehee.[5] It is obvious that there is a group of patients who have been treated surgically for possible superior mesenteric artery pressure upon the duodenum which has resulted in much debate as to the accuracy of the diagnosis and efficacy of the treatment. On the other hand, there is another group in which there is no question about obstruction of the duodenum by the superior mesenteric vessels. Among the many factors resulting in an undue drag of the mesentery leading to duodenal compression are those

of abnormal rotation of the bowel with sharp angulation of the duodenum about the mesenteric stalk, congenital or acquired visceroptosis with the small intestines sinking into the pelvis, a mobile cecum which sags into the pelvis, cicatricial adhesions pulling on the cecum or small intestine, thus pulling the superior mesenteric artery tense, chronic inflammatory and neoplastic processes of a wide variety situated at the proper site in the mesentery near the duodenum, deformities of the spine as in our case and possibly loss of supporting fat and defective body posture in certain patients.

Dr. C. H. Mead: D. P. D. Wilkie[10], professor of surgery at the University of Edinburgh, has presented seventy-five cases of his own in which there was a surgical attempt at correction of chronic duodenal ileus. It is quite interesting to note that in nineteen of these cases or 25 per cent there was an associated gastric or duodenal ulcer. There were twice as many females as males in this group. He found that the one outstanding symptom which was constant in all of his case records was epigastric fullness and flatulence coming on a short time after meals. Pain was usually complained of starting about one-half hour after food and felt just to the left but sometimes to the right of the umbilicus. Vomiting was not a constant symptom but when it did occur it was usually in periodic bouts. In the majority of cases a barium meal will be held up at the site of duodenal obstruction. In the less severe cases of duodenal compression, the diagnosis may become very difficult and finally fade off into a field of theory and imagination, where there is plenty of room for debate.

Duodenojejunostomy re-routing the food around the site of constriction is the most generally applicable type of operation for this condition. In our patient there was never sufficient time to permit anything but the simplest procedure.

Final Diagnosis.—(1)Kyphosis (severe); (2) duodenal obstruction by superior mesenteric artery pressure; (3) enterostomy; (4) acute generalized peritonitis; (5) congenital bicuspid aortic valve; (6) congenital absence of right kidney.

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TUBERCULOSIS IN INDUSTRY

It is fully realized that it is essential for our future to win this war, and the finding of a case of tuberculosis, with the prevention of its further spread, is as definite an act toward winning the war as the destruction of an enemy plane or tank. This is especially true of our industrially employed. A case of tuberculosis in a worker not only removes an important element in production but also necessitates the dissipation of the energies of many others to restore him to health. These people can and should be engaged in the more fruitful work of winning this war. The physicians, nurses, social workers, educators, attendants, dietitians, and all others directly or indirectly related to the care of a tuberculosis case will find that they have only a minimal amount of time to care for tuberculosis. Although by case finding their load will be greater, the removal of an open case from industry will in the long run prevent the increased rise in tuberculosis morbidity and mortality which we greatly fear. The industrial case, therefore, is more important than just any case of tuberculosis.

When industry and the worker realize the terrible cost in manpower and human suffering that tuberculosis entails and that a method of control is feasible, then case finding in industry will be more eagerly accepted and may, in fact, be one of the outstanding contributions toward public health that will survive this war.—Irving R. Tabershaw, M.D., *Industrial Medicine*, March, 1943.

* * *

Present experience in England presents a warning to public and industrial health workers that must not be overlooked. This is the present sharp increase in tuberculosis, which has been especially large among women in general and particularly among young women. The cause for this increase in the tuberculosis death rate is the most difficult health problem confronting the health authorities in England. It is felt that overcrowding, poor nutrition, worry and many other factors are all contributory, but as yet the one chief factor has defied recognition, as well as the reason for the predominance among young women.—M. H. Kronenberg, M.D., *J.A.M.A.*, March 11, 1944.

* * *

It is obvious that industry is going to have tuberculosis as a by-product. The Army has and will have tuberculosis as a by-product, and the civilian population is going to continue to feel the impact of both. This may severely tax bed facilities for there is no bed surplus anywhere if we really use the beds the way they should be used.—Harry M. Mustard, M.D., 1943 Transactions Natl. Tuber. Assn.

HISTORY OF MEDICINE IN WABASHA COUNTY

THE boundaries of Wabasha County as set forth by the first territorial legislature included the territory which is, at present, divided into Wabasha, Goodhue, Dodge, Olmsted, Winona, Mower, Houston, and Fillmore Counties, and includes nearly one-half of Dakota County. In 1855 Wabasha County was reduced to its present size, and this is the territory which will be covered in the present paper. The name of the county, and of the city of Wabasha, is derived from the name of the noted chief of the Keoxa band of the Sioux Indians. His name was Wa-Pa-Shaw, and his village was at Winona, but each year, after planting some thirty acres of cultivated land on the prairie of Winona, he and his tribesmen left their lodges and came in canoes to their hunting grounds at Wabasha. There were often one hundred and sometimes two hundred lodges about Wabasha, and canoes lined the shore for miles. Despite the loss of one eye, old Wa-Pa-Shaw was noted for his striking appearance. He was friendly to the whites, influential in council, and in his younger days one of the best hunters in the tribe. After his death in 1834, his son moved his village to the mouth of the Zumbro River, six miles below Wabasha. Reed's Landing, formerly Rocque's Landing, several miles above the city, was the site of the first white settlement. The future town of Wabasha was christened in 1843.† At this time the few residents there were either connected with the Indian trade or were government employes. Others did not come until about 1850.

The first medical practitioner of whom we have a record in the county was a Dr. McThurston. He came from Ireland and remained in the town of Wabasha for a short while in 1852. His qualifications as a physician are unknown.

The second physician was Francis H. Milligan, who located in Wabasha in 1853, and for a few years was the only physician in that vicinity. Dr. Milligan was a graduate of the Jefferson Medical College (1851), and had practiced in St. Louis for two years prior to his coming to Minnesota. In the early county elections, Dr. Milligan won several offices, serving at one time or another, as sheriff, treasurer, and register of deeds.

During the fifties settlers began to come in ever-increasing numbers, but many of the customs and dangers of earlier days still survived. We are told: "Shooting in many cases was considered as almost a pastime, and bullets were frequently the messages sent to convey intelligence of some offense either real or fancied. Milligan was frequently the target at which the bullets were aimed, but never were the results very serious."‡ There were still many Sioux Indians in the locality and they held their last celebration over a Chippewa scalp in the town in 1858. Dr. Milligan remained in Wabasha until his death in 1888. He served in the war, was the president of both the county and the state medical societies, and was elected mayor of Wabasha.

Among the other pioneer physicians in the county was J. P. Bowen, who came to Wabasha in the winter of 1855-56. He was a co-partner of Dr. Milligan for one year and remained until the spring of 1859. Dr. Nathaniel Tefft came to Minneiska in 1855. He served as a member of the first state legislature in 1857

†The town was not actually platted until 1854.
‡W. H. Mitchell and U. Curtis: "A Geographical and Statistical Sketch of Wabasha County." P. 153 (Rochester, 1870).

and again in 1861 and 1871. In 1860 he located at Plainview and was an active member of the county and state medical societies during the early days of their organization. Dr. F. Chauncy Gibbs was one of the seven men to lay out the village of Centerville (1856), which later became Plainview. He came to Minnesota from Ohio in order to renew his health and did not intend to practice medicine. However, the next year found him continuing in his profession.

The first doctor in Mazeppa of whom there is a record was Ostrom S. Lont, who located there in 1856. He was modest and genial and, by a conservative practice, won many friends although he did not claim to be a graduate of any medical school and he admitted he was not much of a surgeon. It is said that he prescribed condition powders as "hot as pepper" and that some of his patients almost hiccoughed to death from the results. As an illustration of what he, as well as all the other pioneer physicians had to contend with, an early history of Wabasha County has this to say: "One day, he (Dr. Lont) set out with a team to visit a patient seven miles away across the prairies. A furious snowstorm came on, and he succeeded in going only four miles and was housed up four days. At the end of this time, with assistance, he was able to make his way through the drifts back to Mazeppa. In the meantime he had not seen the patient, and the feelings of his wife, who was home and knew nothing of his whereabouts, can easily be imagined." Dr. Lont continued to practice in Mazeppa under an exemption certificate for many years. He was the president of the county medical society in 1870.

Another early physician was Dr. George F. Childs, who practiced in Minnieska from about 1857 until 1860, when he moved to Washington, D. C. He very probably lived a short time in Minneiska several years earlier (1854 or 1855) and spent the intervening years at Winona City. Calvin D. Vilas was the first practitioner in Lake City, arriving there about 1857. He remained for several years and returned after the close of the Civil War. He graduated from the University of Vermont in 1846 and is said to have brought the first clinical thermometer into the locality. William L. Lincoln, who became one of the outstanding physicians in the county, came to the town of Wabasha in the summer of 1857, having previously practiced in Massachusetts and Missouri. He became an active member of the county and state medical societies and served as president of the latter.

It is difficult to determine what diseases afflicted the county in the fifties, since newspapers are not available and the county histories do not touch on this subject. They probably had the same diseases as other river towns of the time—diphtheria, scarlet and typhoid fever, and possibly Asiatic cholera. It is certain, at any rate, that physicians were kept busy treating people for the broken bones and injuries which were common to the strenuous physical life of a pioneer settlement.

1860-1869

In March of 1860, F. H. Milligan published, in the *Wabasha Journal*, a notice requesting the practitioners of medicine in Wabasha County to meet in his office, in order to organize a medical society and to transact other business for the benefit of the profession. Apparently no actual organization grew out of this meeting. Nevertheless, they did agree on the following scale of prices:*

All visits within one mile of office—$1.00.
Visits over one mile, mileage to be added at the rate of $.50 per mile going to the patient.
All visits within town or country after usual bed time, one-third more.

*"Wabasha Journal," April 2, 1860.

Consulting with attending physician—$3.00.
All subsequent visits with attending physician—$1.00.
Vaccinating—$1.00
Cupping—$1.00
Venesection—$1.00
All cases where physician is detained more than usual time at request of patient—$1.00 per hour.
Obstetrical cases—$5.00 to $20.00 plus mileage.
All surgical cases to be charged at the same price as recognized by the Fee Bill of the College of Physicians and Surgeons of Philadelphia.

A note was added to the effect that all persons would be required to settle their accounts every three months if they expected further medical service.

The same year a city physician, Dr. Milligan, was elected for the first time for the city of Wabasha.

A county poorhouse was established at an early date and the county took charge of the indigent. In 1855, under the township act, this responsibility fell upon the individual townships and, in case of illness, the local physician gave his services and sent in his bill to the county commissioners. In 1864, however, the care and management of the poor fell under the direct management of the county commissioners, who acted as superintendents and who appointed county physicians for given localities.

In February, 1863, the newspapers published a reference to an unusual amount of sickness prevailing in the vicinity of Wabasha. This is said to have taken the form of scarlet fever, lung fever and throat diseases. In 1865 there was a bad epidemic of diphtheria which began in the winter and continued through the spring. There are other occasional references to cholera morbus, measles, and fevers, from which it is hard to gather any definite data.

Approximately twenty physicians came to the county during the sixties. Some stayed but a very short time and of some we know only the names. Sheldon Brooks came to Lake City at an early date and conducted a moderate practice, although he devoted the greater share of his time to business. Dr. Perrine, an eclectic physician who practiced and also ran a drug store, J. W. Woodworth, a "botanic physician," W. H. Rice (1861), a homeopath and hydropath, and Mrs. M. S. Tilson, a homeopath and the first woman doctor in the locality, also practiced in Lake City, but none of them remained permanently. It is to be noted that there apparently was a preference for the homeopathic school in that locality; and there continued to be practitioners of that calling through the year 1900. F. E. J. Canney, a homeopath, G. W. Green, an eclectic, E. C Spaulding, R. N. Murray and H. W. Spafford came later in the sixties. The last named was a graduate of Queens College, Canada, and also had received a diploma from the Opthalmic Infirmary of New York. He helped to organize the county medical society and served as president of the organization in 1872.

To Wabasha city there came, among others, William Lindenburg, I. J. Wells, C. P. Fisher and P. C. Remondino. The last named practiced for a short while with Dr. Milligan before setting up his own office. He was a graduate of the Jefferson Medical College. He served with the French Army during the Franco-Prussian War and left Minnesota for California where he became quite prominent in public health activities.

Newcomers to Plainview were J. P. Waste, who was a partner of Doctor Tefft, and a Dr. Westfall and W. A. Allen, homeopaths.

During the Civil War, Drs. Milligan, Remondino and Lincoln served as surgeons in Minnesota regiments. O. W. Crary, J. P. Waste and J. P. Davis joined regiments from other states, and John C. Adams served in the Confederate Army.

The war was as disturbing an element to the medical profession as to any other. One physician expressed his willingness to receive wheat in return for his services. Others devoted time to running drug stores or other private enterprises. An indication of the times is seen in the newspaper notice (July, 1864), published by Drs. Milligan and Lincoln, that they were advancing prices 50 per cent.

Toward the end of the sixties, times became more prosperous, and the number of physicians in the county seemed to warrant another attempt to form a medical society. It is the view of Curtiss-Wedge† that a "tacit understanding was indulged in by those who had been in the practice of medicine in Wabasha and Plainview as to the status of a county medical society; but this arrangement did not carry. Dr. Vilas had temporarily left Lake City and it was not known that there was a graduate in medicine in active practice there at that time. The initiatory steps were, however, taken at Lake City . . ." The first meeting was in June, 1869. The charter members of the society were F. H. Milligan, president; E. C. Spaulding, secretary; I. J. Wells, H. W. Spafford, R. N. Murray and P. C. Remondino. At that time, Dr. Spaulding gave a large share of his time to editing the *Lake City Leader*. R. N. Murray, also of Lake City, was in the milling business, although he began to practice soon after this meeting. In December of 1869 N. S. Tefft and J. P. Waste became members. It was proposed that the society should assume the duties of county physician for the sum of $800 per year, this sum to be used for the purchase of instruments and books for the medical society. Although the county commissioners accepted the proposition, there is no record of such purchases being made.

Among the first items of business transacted by the organization was the adoption of a fee table, some of the provisions of which remain the same today. Country calls were at the rate of $1.00 a mile, ordinary calls in town, $1.50, and visits on board a steamboat or at the railroad station were from $3.00 to $5.00, as were also visits to places where smallpox or cholera existed. The charge for introducing a seton was $2.00, ordinary obstetrical cases brought from $10.00 to $15.00, testing urine by ordinary analysis, $5.00 to $10.00, and reducing ordinary hernia by taxis, $5.00 to $20.00. The reducing of strangulated hernia by operation, treating secondary or tertiary syphilis, or trephining of the cranium were valued at from $50.00 to $100.00. The charge for operations involving great risk to life ranged from $100.00 to $500.00.

1870-1879

During the seventies, nearly thirty new physicians began to practice in the county. This is not, however, an indication of much growth in the profession, since only a few remained permanently.

John C. Adams, who had come to Lake City several years before as the rector of the Episcopal church, began to practice medicine in 1872. He obtained his medical degree in 1857 from the University of Louisiana and became known as a contributor to medical journals and an active member of the county and state medical societies. George R. Patton, who received degrees from Miami Medical College in 1855, and the Medical College of Ohio, made a name for himself in Cincinnati before coming to Lake City in 1871. He was connected with the Miami Medical College, and was the author of a number of medical brochures. He invented some instruments and spent much time in scientific research. B. F. LaRue, who was affiliated with the local and state medical societies, came to the county about 1870. E. O. Baker, L. P. Bunce, Charles W. Crary, Carl C. Stauff and G. Nicolai were also practitioners who located at Lake City.

†Franklin Curtiss-Wedge: "History of Winona and Wabasha Counties," p. 703.

W. T. Adams, a graduate of Rush Medical College, came to Elgin in 1875 and remained there, an active practitioner, for forty-two years. He identified himself with the county, state, and national medical societies as well as the Southern Minnesota Medical Association, of which he was one of the organizers. D. H. Roberts came to Plainview; J. P. Davis and E. Dukes came to Kellogg; Dwight Brooks and H. H. Hamilton began to practice in Minneiska; S. P. Jones, an eclectic physician, in Weaver; H. N. Rogers, in Zumbro Falls; and E. H. Bacon and S. Gould, in Mazeppa.

In Wabasha, Quincy A. Low from the Long Island Medical College, Ferdinand Lessing, University of Pennsylvania, Ferdinand Van Dyke and Newton McVey, were affiliated with the county and state medical organizations. J. J. Stone, who had been conducting a drug business and had studied with Dr. Remondino, opened an office in 1873. Other practitioners were F. L. Richter, E. A. Tupper, E. Thorn, C. W. Tinker, and O. Schmidt.

The Wabasha County Medical Society met annually during most of the seventies rather than twice a year as was originally planned. Occasionally one year was skipped altogether. Membership was not limited to Wabasha County, and adjacent towns in Wisconsin were sometimes represented. Those who served as presidents of the organization were F. H. Milligan (1869), N. S. Tefft (1870), (none in 1871), H. W. Spafford (1872), William L. Lincoln (1873), M. B. Axtell of Pepin, Wisconsin (1874), J. C. Adams (1875), J. J. Stone (1876), J. P. Waste (1877) and C. D. Vilas (1879).

The measles was common in 1870 and in 1875 and there were epidemics of scarlet fever in the same years. With the exception of severe diphtheria in Minneiska in 1878. little else is known of the general health of the county.

A laporatomy performed by W. L. Lincoln in 1879 is deserving of mention because it was unusually successful. The case was one of intestinal obstruction due to a loop of the intestine being caught in a hole in the mesentery. About a year earlier, mention is made in the minutes of the Wabasha County Medical Society meeting of a case of "perityphlitis" operated with success by John Charle Adams of Lake City.

An interesting sidelight on medical competition of the times was the personal rivalry which existed for many years between the elder Dr. Lincoln and the elder Dr. Milligan. Dr. Milligan, who came to Wabasha in 1853, was already a leading citizen when Dr. Lincoln arrived in 1857. The two practiced side by side and served, at various times, on the same town and county boards, and were active in politics. Both were later elected president of the State Medical Association and both achieved wide reputation as physicians. Their rivalry, however, was vigorous and personal and no holds were barred. The sons of both men became physicians. Both continued their fathers' practices in Wabasha and loyally perpetuated the family feud.

During this period, a county hospital was established, connected with the poor farm at Wabasha. Dr. Milligan was in charge for a number of years. With the building of Saint Elizabeth's Hospital in Wabasha in 1898, however, county patients were cared for there, and the county hospital was abandoned.

The custom of publication by physicians of their professional cards in the local newspapers was a fairly common one up through the seventies. After this period. however, these cards began to disappear rapidly from local publications.

They ranged from simple, formal statements to floral verbosity. Dr. Vilas' card is an illustration of the latter type.

Dr. C. D. Vilas
Resident and Family Physician
Will hold himself in readiness to alleviate
the afflicted, and give battle to all diseases
flesh and blood are heir to.
Office at his residence on High St.
Lake City, Nov. 30, 1861

1880-1889

Among the new practitioners in Lake City during the eighties were Edward A. Patton, who practiced with his father for two years before leaving for Minneapolis, D. W. Horning, a homeopath, and B. F. Mott, an eclectic physician. A. E. Balwin and Sheridan Cobb located in Plainview for a short while. In Mazeppa we find A. C. Boyd, W. D. Little, R. A. Grove, and F. W. Calkins. Drs. McDavit and Sutton spent a short time in Minneiska and G. C. Wellner, S. T. Armstrong and a Dr. Tucker in Wabasha. W. H. Lincoln, the son of W. L. Lincoln, began to practice in Wabasha in 1887. He specialized in surgery and within a few years he was doing most of the work of this type in the county. Another of the well-known physicians was James B. Cole, whose father was an outstanding physician in Winona.

Those who served as president of the Wabasha County Medical Society during these years were O. S. Lont (1880 and 1887), J. C. Adams (1881), F. N. McVey (1884), J. P. Waste (1885), M. B. Axtell (1886) and N. S. Tefft (1888). Meetings were often held semi-annually and papers by the members were usually presented at each meeting. In June, 1884, a resolution was adopted repudiating the article on the medical profession contained in the recently-published "History of Wabasha County" by H. H. Hill and Company.

At this time the city of Wabasha had a board of health which was appointed by the city council and which fulfilled its duties very well. F. H. Milligan, W. L. Lincoln, F. W. Van Dyke, and Q. A. Low served on the board at various times. Under their direction, people having contagious diseases were quarantined and other preventive methods were undertaken to assure the health of the city. C. D. Vilas acted as health officer for Lake City for the modest fee of twenty-five dollars a year.

The board of health reported only a few sporadic cases of diphtheria in Wabasha and Lake City in 1880. The following year the total number of deaths from diphtheria in the whole county numbered twenty-nine. The disease returned in the winter of 1888 in the vicinity of Weaver and Minneiska and, in the winter of 1889, schools in the western part of the county were closed for short periods. The death rate does not appear to have been very high during these epidemics. In March, 1881, the newspapers reported measles to be "on rampage" at Mazeppa, and there were a few cases of scarlet fever in Wabasha. Late in the summer of 1885 there was a considerable amount of dysentery in Plainview.

The duties of county physician were generally divided between seven or eight men with yearly salaries ranging from about $56 in some districts to $150 in others. The total yearly expenditure by the county for such services was more than $600, not including physicians' fees for the examining of the insane, nor the fees of the county coroner.

1890-1900

The arrangements for county physicians remained about the same during the nineties. In 1894, the county commissioners allowed each district $20—or more if the bills were itemized—for medicines for the poor. One of the county physicians, W. F. Milligan, son of F. H. Milligan, took charge of the county hospital and the county jail, and was allowed $75 per year for medicines. In 1898, Saint Elizabeth's Hospital was opened under the charge of the Sisters of the Sorrowful Mother. Dr. Milligan was the resident physician. The patients of any reputable physician were received. At this time, the county hospital was abandoned and county patients were sent to Saint Elizabeth's. W. L. Lincoln opened a hospital in Wabasha especially for the care of surgical cases in 1895 and the city and county were thus well provided for by two modern institutions.

In 1890 there was a small epidemic of grippe in Mazeppa, and during the last year or so of the decade there were mild cases of diphtheria. The health of the county seems to have been very good.

About sixteen new physicians began to practice in the county during these years. E. S. Muir and J. A. Slocumb settled in Plainview; M. H. Cremer and L. E. Claydon, in Mazeppa; W. F. Wilson, E. H. Bayley, W. J. Cochrane and T. C. Titzell, in Lake City. The last named served as mayor of the town for several years. T. R. Watson came to Zumbro Falls, J. R. Wilson to Minneiska, John Tenny to Kellogg, and A. J. Button to Hammond. A. L. Holmberg, F. A. Drake, now at Lanesboro in Fillmore County, and C. W. Bray were young men who for short periods were associated with other physicians in Wabasha. P. N. Kelly, Olmsted, began to practice in Wabasha in 1893. W. F. Milligan, son of F. H. Milligan, opened an office in the city of Wabasha in 1895, several years after being graduated from the Ohio Medical College in Cincinnati. He was an outstanding physician of the county. J. R. Bond came to Wabasha in 1899.

Some of the men who served as president of the county medical society in the nineties are: G. C. Wellner (1890), J. C. Adams (1891), J. B. Cole (1892), C. Q. Scoboria (1893), W. F. Milligan (1894), N. S. Tefft (1895), W. T. Adams (1896), J. C. Adams (1897), J. T. Waste (1898), E. H. Bayley (1899) and J. A. Slocumb (1900).

A careful search of the records shows that virtually all regular physicians practicing in the county, excepting those who remained only for a short time, joined the county medical society; and all those whose membership extended over a period of two or more years served one or more terms as president of the society. This account mentions only those who were already settled or who had located there and were identified with the county medical society at some time before 1900.

President's Letter

CANCER EDUCATION

Public education about cancer is an extremely important part of our all-out attack against malignancy.

While it is obvious that there are still cancerous growths which cannot be successfully detected and removed by any method available to us now, and while there is still much that we do not know about the origin and control of malignancy, the fact remains that many lives are lost each year which could have been saved if the patient had presented himself early enough for treatment. Extensive education is necessary to accomplish this important part of the cancer-control program.

The Committee on Cancer of the Minnesota State Medical Association has been active in the educational as well as the scientific phase of the fight against cancer. For education of the public, the committee has wisely associated itself closely with the Minnesota Society for the Control of Cancer and its Women's Field Army. The chairman, Dr. Max Alberts of St. Paul, is a member of the society's executive board and has given much time and thought for many years to its program and policies.

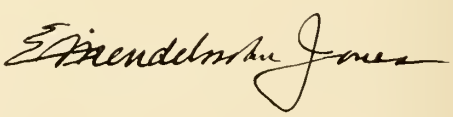
Under the guidance of his committee, a program has been built up which is state-wide in scope and increasingly effective. It has reached thousands of people with sound information about malignancy, using pamphlets, exhibits, lectures, motion pictures and special teaching aids for science instructors in the high schools. Workers recruited from women all over the state have been trained each year in a unique institute held at the Center for Continuation Study on the University campus. For this institute the committee has co-operated with the University medical school to provide instruction.

The cumulative effect of this effort is now being demonstrated in the increasing number of patients who present themselves for the routine check-up recommended for the early discovery of cancer.

This welcome new group of patients has responded intelligently to the appeal made by the cancer society and our committee. They present a special responsibility to the doctors to whom they apply. Often they are not conscious of any symptoms which might suggest the presence of malignancy. They have merely reached the age when cancer is most likely to develop and wish to be reassured. Such patients deserve a sympathetic hearing and an adequate examination, even in the midst of wartime pressures, if we are to make progress in our objective of finding cancer early, and if we are to avoid an unfortunate appearance of disagreement between our individual practice and our avowed public policy.

Special aids to the busy general practitioner in making these examinations are planned by the committee as part of its program this year.

No committee in our entire organization has a more important task and none has accomplished more through its own efforts and its close association with the Minnesota Society for the Control of Cancer. It deserves the support and active co-operation of every member.



President, Minnesota State Medical Association.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

USE OF ERYTHROCYTES

During World War I the value of blood cells was recognized. At that time certain workers separated the cells from the plasma, discarded the plasma and used the resuspended cells as a parenterally administered agent.

Within the past few years much attention has been focused on the use of plasma. Early in the plasma program the blood cells were discarded. Plasma has proved its value; however, the cells now again are being recognized as material of a value not to be disregarded. Certain investigators resuspended these cells in various solutions and administered them intravenously to patients whose primary need was an increase of the erythrocyte and hemoglobin level. When these cells have been carefully and correctly handled, the benefit obtained in raising the erythrocyte and hemoglobin level has been comparable to that of whole citrated blood administered in like amounts. These reports stimulated much interest, so that today many investigators are using this material as regular treatment of certain patients. Concentrated solutions of cells also have been used intravenously and the benefit obtained from this material has been correspondingly valuable.

The suggestion has been put forward that regular blood donors in the plasma program could be used more frequently than at present if they had these otherwise discarded blood cells administered back to them. Blood donors quickly replace the plasma volume lost from a donation of blood. However, it takes longer to replace the cells lost from a donation of blood than it does to replace the plasma. If an amount of resuspended cells similar to the amount donated could be administered intravenously to these donors immediately after their donations, these donors might be used more frequently than every two to three months.

About two years ago these cells were used locally as a dressing material for certain slowly healing wounds and ulcers. It was thought that some growth-stimulating factor was present to increase the healing of these otherwise indolent wounds and ulcers. Because of the difficulty of keeping the gelatinous pastelike material in contact with the wounds, these blood cells were dried in a process similar to the drying of blood plasma. This dried powder was applied as a dusting material to those wounds and ulcers. It was felt that some stimulating factor was present, as many of these wounds or ulcers seemed to heal more quickly than when dried blood cells were not used. More investigational work will have to be done with this idea in mind.

The subject of blood is occupying the time of many investigators. Much valuable knowledge has been acquired. However, it is felt that the surface has barely been scratched.

Thomas H. Seldon, M.D.

POLIOMYELITIS IN 1944

The year 1944 has been and continues to be a bad year for poliomyelitis in Minnesota as well as other parts of the country. While up to May first only six cases had been reported to the State Department of Health with symptoms beginning the first four months of the year, in May there were four, in June, twelve, in July, forty-five in August 189, and up to September 15, forty-two, with symptoms developing in those months, a total of 298 cases with seventeen deaths. There is always a lag in the reporting of poliomyelitis cases so that the figures for all months, especially for August and September, will be augmented eventually.

Up to the middle of September, 1944, Minneapolis had had ninety-seven cases, Saint Paul eighty-three, Duluth thirty-four, and the remainder of the state eighty-one. This number includes ten cases arising outside the state.

While there are a number of cases of poliomyelitis in Minnesota every year, the epidemics have been outstanding in certain years during the past two decades. In 1916, the state had 912 cases with 105 deaths; in 1921, 702 cases with 102 deaths; in 1925, 955 cases with 145 deaths; in 1931, 811 cases with sixty-six deaths; and in 1939, 564 cases with fifty-three deaths.

The present epidemic has hit the Atlantic seaboard harder than the rest of the country. From January to August 31, 1944, New York had reported 2,976 cases, Pennsylvania 765, North Carolina 659, Kentucky 531, Ohio 501, Virginia 434, Michigan 434, and California 243. Up to August 12, 1944, a total of 5,009 cases had been reported for the country at large compared with 3,311 cases for the same period last year and an average for the past four years of 1,796, for the same period. Last year some 12,401 cases were reported for the country at large, which was higher than in any other year, except in 1916 and 1931. Up to September 15, this year, the reported cases numbered 12,412.

In spite of all the research in poliomyelitis conducted in various medical centers, we are lacking in essential knowledge of the disease. While it has been known since 1909 to be a virus disease, and the virus has been detected in the nasopharynx, in the intestinal tract, and in sewage, we know little about the spread of the contagion. The seasonal and scattered incidence are unlike other epidemic diseases. During an epidemic we know that frequently in the same household there are cases of poliomyelitis other than the paralytic one with little or no symptoms and no paralysis. Why will one individual develop paralysis and another not? It is generally accepted that during an epidemic there are many carriers of the infection who remain perfectly well.

In view of our ignorance of the mode of transmission of the disease and lack of methods for detecting carriers, it is not surprising that health authorities have been rather at a loss in promulgating rules effective in the control of epidemics. Until more is known about the disease and its transmission, the prevention and control of epidemics will be rather futile.

It is evident that poliomyelitis will be conquered only through research. In the past eleven years, over 29 million dollars, more than half in the last two January campaigns, have been contributed by the American people to fight the disease. About half the total has remained in the counties where it was raised to provide medical care for the afflicted. Several millions are being devoted to research dealing with the virus, epidemiology, education, and after-effects of the disease. Means to prevent and cure this crippling malady is the goal.

D.D.T.

THE insecticide D.D.T. promises to be one of the outstanding discoveries in recent years. Already many valuable uses of the drug in combatting the disease and destruction caused by insects have been proven, and research is under way which will doubtless greatly widen the sphere of its usefulness.

D.D.T., an abbreviation for dechloro-diphenyl-trichloroethane, was synthesized in 1874 by a young German chemistry student, Othmar Zeidler, of Strasbourg. In searching for a substitute for the insecticide pryethrum, the value of D.D.T. was demonstrated by the Geigy Company of Switzerland in combatting the potato beetle. Its insecticide qualities were called by representatives of this company to the attention of the U. S. Bureau of Entomology, which was searching at the request of the Surgeon General for an insecticide to control lice. Trials with a dusting powder containing D.D.T. in this country warranted its trial in North Africa and later extensive use in Naples. An epidemic of Typhus was well started in Naples in December, 1943, when a widespread treatment of some 2,500,000 individuals with D.D.T. dusting powder stamped out the epidemic. Our troops in Africa and Italy are equipped with a small shaker can of the powder and are required to treat the inside of their underclothes daily with the powder. By this simple means typhus among our troops in Italy is said to have been practically eliminated. So powerful is D.D.T. that underwear treated with an emulsion of the drug maintains its insecticide qualities for as long as two months and in spite of as many as eight washings.

D.D.T. is a white powder with a pleasant fruity odor, practically insoluble in water but soluble in kerosene, xylene, and acetone. It poisons insects on contact as well as ingestion. As a dusting powder, it is not absorbed through the skin of animals or man, although it may be absorbed when applied in solution. Animal experimentation has shown that when fed in large or repeated small doses it produces tremors and spasticity and, at autopsy, liver and kidney degeneration and neurological changes not as marked as symptoms would suggest.

In addition to its use in destroying the body louse, D.D.T. has already been proved valuable in destroying a variety of insects. Its action is

specific in that it destroys the codling moth but not the red ant. Poor results have been obtained in the treatment of the Mexican bean beetle and the cotton boll weevil. Its ingestion by the common May beetle is fatal, although this insect can swallow the arsenites with impunity.

The spraying of D.D.T. in solution on the ceiling and walls of barns has proven highly effective in ridding barns of flies. When the flies light on the sprayed surfaces, they become paralyzed and die. Two sprayings a summer are said to be sufficient. Chicken lice, roaches, dog ticks, chiggers, bed bugs, and moths which cause such loss in woolens, all succumb to D.D.T.

Among some of the more pretentious uses to which D.D.T. has been put is the spraying from the autogyro of forests infested with the spruce bud worm in Ontario and Quebec. This pest has been most destructive and is spreading. Indications are that D.D.T. offers a solution. In Alberta similar spraying from an airplane freed large area from mosquitoes, and proved harmless to birds, animals, and fish.

In attempting such widespread destruction of insects, care will have to be taken that, in view of the selective activity of D.D.T., insects essential in pollinization are not also destroyed.

Sprays of D.D.T. are now being used in the West experimentally in protecting fruit and vegetables. The possibility of poisoning from the ingestion of food so treated is being investigated.

It seems likely, however, that D.D.T. can be classed with penicillin and blood plasma—three outstanding contributions to the welfare of humanity during the war years.

HIGH ON A WATCHTOWER

These days in which you are embarking on the study of medicine are not only days of challenge; they are days of superlative challenge. Forces more deadly than typhus are unleashed on mankind. Whole nations of the earth are sick unto death; the bodies, as well as the souls, of men are smitten with plagues whose names you will not find listed in any medical text. We have learned, to our shocked amazement, that we still live in a world where no horror is incredible, no sadistic cruelty unthinkable, no folly untriable! Moreover, the grisly, ghastly Horsemen are abroad in the world—War, Famine, Pestilence, Despair, Death! Over the entire earth are the feet of their ravaging; in the depths of the sea they lurk; miles high in the air they hover. Though we still have the light of the sun, yet we still have the darkness of the earth, the darkness of men's hearts, to deal with!

On the first of October, 1908, Rudyard Kipling delivered an address to the students of the Medical School of the Middlesex Hospital, London. During the course of his remarks, he said:

"I have had the good fortune this afternoon of meeting a number of trained men who, in due time, will be drafted into your permanently mobilized army, which is always in action, always under fire against death. Of course, it is a little unfortunate that Death, as the senior practitioner, is always bound to win in the long run, but we non-combatants, we patients, console ourselves with the idea that it will be your business to make the best terms you can with Death on our behalf; to see how his attacks can be best delayed or diverted, and when he insists on driving the attack home, to take care that he does it according to the rules of civilized warfare. Every sane human being is agreed that this long-drawn fight for time which we call Life is one of the most important things in the world. It follows, therefore, that you, who control and oversee this fight, and who will reinforce it, must be amongst the most important people in the world. Certainly the world will treat you on that basis. . . . It seems to be required of you that you must save others. It is nowhere laid down that you need save yourselves. That is to say, you belong to the privileged classes."

Yes, you do belong to a privileged class! Even in times of war you are not asked to shoulder a gun. While your fellows, in your own age group, are being instructed in the arts of primitive and modern killing, you are allowed to pursue your medical studies to the end that you may learn to conserve, and save lives. Moreover, when this present war is ended, most of your fellows who have fought, and survived, on the far-flung battle fields of the world will return to civilian life, to the trades and skills which they have known and have developed. You, on the other hand, will spend your lives on the fighting front, soldiers of science enlisted for all your days in the age-old, undesisting battle against disease, suffering, ignorance, want.

Some of you will go into the practice of your profession in this country, helping to minister to the human wastage of war among those who return, helping to guard our shores against the importation of tropical diseases, as well as aiding in preventing, and controlling, the multiplicity of diseases which have afflicted our people ever since the white man came to the Americas. Many of you—perhaps, the majority—I venture to predict, either of your own free will, or under government orders, will go to the far corners of the earth, to the lands of Europe, Africa, and the Orient that have been devastated and depleted by the fires of this global war. Think what the needs will be! Whole portions of the world in ruins! Whole peoples hungry, homeless, desperate, shattered in minds and bodies! Starvation rampant! Disease rampant! The grisly Horsemen—Famine, Pestilence, Despair, Death—still a-ride!

God grant we send you forth with skilled hands and consecrated hearts! God grant that wherever your

(Continued on Page 868)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

CALIFORNIA CONSULTS AN EXPERT

Problems in distribution of medical services have been brought to a head in such states as California and Michigan as a direct result of the war.

Solutions which might have required many years of trial and error to evolve, have been forced into an advanced development, especially in California; and what has happened and is happening there may well be examined closely by doctors everywhere as a laboratory experiment in meeting issues which will eventually confront other states.

The California Physicians' Service, providing prepaid medical care to low-income families, had a slow and uncertain start some years before Pearl Harbor. The over-night growth of war industries, and the tremendous influx of workers occasioned by the war, presented problems in medical service which would not wait for solution. Leaders in organized medicine in the state made use of every available tool to keep from being overwhelmed. They expanded their California Physicians' Service, made unprecedented alliances with war plants, housing authorities and health officials in the hope that the delivery of medical services could be kept in the hands of private medicine and that government bureaus could be kept from stepping in and assuming the responsibility.

Profession Divided

In that respect, their efforts have so far been successful. But it is clear from published statements by officials of the California State Medical Association that the battle is not yet won in California and that one of the hurdles has been the difficulty encountered in lining up the members, themselves, behind a united state-wide plan of action.

The same difficulty has been encountered in many other states where initial experiments are now going on in the provision of prepaid medical service under medical association sponsorship. Misunderstanding, indifference and actual hostility on the part of individual physicians or component societies have threatened many another plan which had the wholehearted support of administrative bodies and association houses of delegates.

It is entirely in line with the pioneering spirit of the California organization that an interesting new step in solution of its difficulties has recently been taken in California. A capable and experienced public relations firm was asked to make a survey of the whole problem. The report of a representative of this firm, Mr. John R. Little, of Los Angeles, was presented recently to the California House of Delegates and is reprinted, here, in condensed form, from the July issue of *California and Western Medicine* for two reasons. The first is that it provides a unique estimate by a qualified outsider on the social problem that confronts all medical organizations in these times. The second is that medicine's job today does not differ greatly in its public relations aspect from the job that has confronted many other groups in meeting the changing conditions of American life. It seems clear, therefore, that medicine will need the aid of such experts as Mr. Little, if it is to remain in control of its own house and avoid encroachment of government in the control of its essential functions. Minnesota has largely been spared the difficulties which are so acute in the delivery of medical service in California; but Minnesota doctors, also, should pay careful heed to the observations and advice given to their California colleagues in this report. The time is coming when they, too, may need such guidance.

The highlights of Mr. Little's report follow.

Public Relations Survey of California

Like all the people of California, I have a great admiration for the medical profession. I regret, however, that I cannot come before you today with complete approval of all that you are and all you have done.

Nothing is to be gained by molly-coddling you. If you are to make progress, you must face facts realistically. Therefore, it is my intention to indulge in some very plain talk. . . .

Importance of Frank Approach

Let us start a major premise. The great tragedies man endures at the hands of his fellows, he often brings upon himself. These are due, in large part, to a failure to heed warnings usually given in ample time. Conversely, his greatest successes with his fellows are attributable largely to the application of a very simple formula—a formula so simple that we are apt to overlook its importance. It is in three parts: (1) heeding the Warning; (2) finding the facts; and (3), taking positive rather than negative action. The historians among you will agree that the application of such a formula in human experience is the reaching of new plateaus in accomplishments and prestige.

Recent events provide countless examples of the stupidity and failure of leadership to heed warnings. You remember Pearl Harbor, of course. You also remember radar-spotted planes out beyond the Islands; that radar gave a warning and the warning was unheeded. Had reconnaissance gone out to determine the identity of those planes, had the defense forces been marshalled meanwhile, and had aggressive action been taken when the report of facts came in, I am informed by officers of the Navy that the tragedy of Pearl Harbor probably would never have occurred, and the Pacific War might well have been far less costly in life, time, money and national energy.

Second, do you remember the action of business in the '20's? Conservative business leaders and economists issued warnings which were of public record then, and are of public record today—warnings that business was compounding credit almost to the point of national intoxication. Had the situation been surveyed and aggressive action taken in time, the hangover economic headache of the '30's might have been avoided—at the very least, it would have been greatly mitigated. Never again will business be allowed to exercise the authorities and control which it did then.

Third, all of you, I think, can remember how the world of finance has been repeatedly warned over many decades that it must clean its own house, and police its practices and its members. Had it heeded that warning, surveyed its practices and policed its members, it, today, would be controlling its own destiny. Instead, it bellowed with rage. It hurled charges of dictatorship at its critics. It mouthed platitudes about free enterprise, but assumed none of the responsibilities of free enterprise. The result was the stringent securities and exchange law which was imposed, simply because finance itself had proved it was unable to serve the public realistically with control in its own hands. Never again will finance have the privilege of guiding its own destiny.

Leadership, fortunately, is not always blind and stubborn and stupid. There are many examples of leadership in numerous fields which has followed the simple formula successfully. This afternoon I would like to spend a little time telling you about one such leadership. I ask that you study it, as I tell it, to see what parallels you may find to your own case.

A Recent California Problem: Method of Approach

In 1935, the Legislature of this State passed a Chain Store bill and the Governor signed it. It was a discriminatory tax so punitive it would have put the chain stores out of business. The antichain store forces were united, strong and vocal. The chain stores were highly competitive and disunited. It came as a great shock to them that the people who benefited most by chain-store operations were apathetic to their cause and, indeed, large numbers of people were actually hostile. It came as a shock to them, also, that farmers and purveyors to their business were apathetic and, in many instances, were hostile. Chain stores had forgotten the fundamental public relations truth: you have to be more than right, you have to seem right.

They hired our organization. We surveyed the facts, and under our guidance they took positive action. Their last recourse was to the people themselves through the referendum. There was only a year in which to achieve success. And for seven of the twelve months there was no surface indication that anything was happening. Actually, the most important part of the campaign was under way, for they were cleaning house and they were making friends by demonstrating friendliness. . . .

When the chain-store house was cleaned, we went to the public. We took the new story of the chains to the people. Resolutions of support came in from hundreds of organizations, not only in California, but throughout the nation. In a campaign notable for its vigor and scientific controls, the anti-chain store forces were badly whipped. In other States we conducted similar campaigns and whipped the anti-chain store forces. Chain stores then requested we meet with chain-store operators, nationally. The result was that, universally over the nation, the chain stores took the blueprint that was made right here in California and applied it to themselves. Never since that time have the anti-chain store forces raised their hands.

Medicine May Be Facing a Similar Problem

Something of this nature is happening with medicine in the State of California. And I think we may look forward to a like result. First, your Council has heeded the warning. Instead of looking to opinion among the membership of this organization—opinion which frankly runs the gamut of views of thirty years ago to that of the lunatic fringe—it hired an organization to find the facts. This organization, incidentally, spends thirty to thirty-five million a year of its clients' money to guide their destinies in such ways as these. Second, we have taken the next step for you. We have found the facts.

Today, you are met here to determine whether or not you will take the third step. The third step, you

will remember, involves taking positive action by (1) putting the house of medicine in order in this State; and (2) taking your story right to the public. We cannot force you to take this third step. Indeed, we would not if we could. But I think you will note an interesting parallel between our professional relations with you and your relations with your patients. I am sure you have had many experiences with patients in which you recommended treatment only to have the patient fail to follow your suggestions. If so, you will appreciate our position. We know, through vast technical experience and a very careful study of the facts surrounding this case, what will cure the malady of Federal Medicine. But whether you will be a good patient or a bad one, we will not know until you, yourselves, have made up your minds.

Problem Can Be Solved

It is our opinion that problems far more complicated than yours have been solved. We do not believe any sleight-of-hand is necessary to solve this one. It is purely a matter of common sense, of facing facts realistically instead of rebelling against them, or hiding in panic behind a mask of disbelief.

Personally, gentlemen, I have grown weary of hearing it said: "The doctors can never get together; they never can act in unison." I submit this as merely a defense mechanism.

We are well aware that doctors are individualists. We know they are trained from medical school on to trust their own judgment implicitly. It is essential they be so trained, for they may find themselves with a serious operative case far from any operating room, proper instruments or trained assistants.

We know, too, that within their own world, doctors are supreme. Their word is law. And they are accorded the deference due their importance. . . .

Unfortunately, the demands of the profession require that doctors spend their lives within a very narrow sphere. Largely they come in contact only with people who are sick. Their social hours are spent mostly with other doctors. And even within their own profession, they are limited to the local viewpoint of their colleagues. Only a few of them (like yourselves) have the advantage of commingling of opinion with doctors from other sections of the State or Nation. . . .

With all these circumstances surrounding the career of the doctor, is it any wonder that the opinions of your members are so divergent? Recently in this city I put myself through the fire during a question period to learn the extremes of viewpoint among a large proportion of the delegates here today. In your interest I wanted to discover what these viewpoints were and what motivated them. I found out to my complete satisfaction. For several days I was rather depressed by what I heard, and then, when sound judgment returned, I realized that those men were merely rebelling against something they feared and did not understand—which, we must admit, is rather normal human behavior.

In general, they sought a scapegoat for the current ills of medicine. They found two rather innocent ones: the public and legislators.

Concerning Federal Medicine

If there is any one thing I must do here this afternoon, it is to convince you of one vital truism. You simply must get the thought completely out of your mind that Federal medicine can be imposed by anyone, by a pressure group like organized labor, by politicians, or by any administration, Republican or Democratic. Many of you fail to understand that the Government is only a means (and historically the last resort), by which the people get what they want when they cannot get it any other way.

Please get this straight: The people do not want Federal medicine. They only want what they have been told will result from Federal medicine. The pressure groups and the politicians cannot enact Federal medicine without the clear will of the people. These are not just words. This is the crystal truth, as understood by any sixteen-year-old political science student. . . . What the people want they will ultimately get. The people want everyone to have the benefits of scientific medicine at a cost the lower-income groups can afford without financial catastrophe. I suggest you rid your minds completely of any consideration of politicians, pressure groups and administrations; that you think only of what instrumentality you can supply which will satisfy the peoples' wants—an instrumentality which will be superior to anything the politicians can offer.

Most of the other divergent and extremist viewpoints come from misunderstanding. Judgments and opinions are being formed from incomplete information. It is no wonder such judgments are faulty. Why is the information incomplete? The answer is very simple. The doctors of this State are very busy men and women. If my observation of a few can be applied to the whole, the medical desks in the State of California are piled with staggering heaps of medical journals, Medical Association bulletins and reports—very largely unread. I have no doubt the report sent out by your Council on the Survey has not yet been thoroughly read by a number of the Delegates here.

Regardless of all this, the truth is that the doctors can act in unison. But they will not do so unless they get all the facts. The common danger, when clearly understood, will impel them to united action—just as it does all groups whose leaders heed the warning. The plain duty of you men and women in this hall is to see that the members in your own districts get fully acquainted with the truth. Like the chain-store managers, you must heal the sore spots.

There is already a substantial majority of supporting opinion to which you can point. But since you are dealing with doctors, I would not use it. The truth is a far better tool of conversion. Once you have made a convert out of an essentially honest man, you have gathered the strongest adherent into your fold. For the honest man who finds he has been wrong, like the reformed drunkard, is the most eager to convert others.

Acting in unison is nothing more than team play. True, it takes a kind of spiritual guts on the part of the individual to put aside his interests for the sake of the team's objective. Doctors, however, seem to have a highly-developed spiritual and esthetic quality.

Once they learn the joy of team play, as a few of you have, you may expect to see them in the thick of the battle using their highly developed intelligence and tact to disarm the enemy and render him harmless.

On Positive, Rather than Negative Action

We have said that the third step: taking positive than negative action, involves two moves: (1) cleaning house; and (2) taking your story to the public. You may wonder specifically what is involved in cleaning house. I should like to tell you. First, you must unify the profession in this State. If you cannot throw the weight of a majority of your people behind a united front and then set up the machinery to meet the demands of the public, the people will desert you for a political panacea. Your problems of unification are no more serious than those of other groups. These are merely different problems. The machinery which you set up is the voluntary prepayment plan. The public will accept it as preferable to Federal medicine. But the plan which you set up must be so conducted that the whole profession will rally to it, will support it enthusiastically—otherwise it is no weapon.

At the request of the Council, we have contacted about 75 per cent of the membership throughout the State. We found no basic opposition to the prepayment plan idea. The opposition—and it is formidable—is to this prepayment plan which you now have. It is important, then, to show the membership that there is a clean cleavage between what has happened up to this date and what will happen from now on.

How shall you make that cleavage? We suggest that you start thinking in terms of what your prepayment plan must develop into. You must be prepared to cover between three and five million people in this State very rapidly. We don't believe you have realized the immense size of the corporate structure which must be built. (The one you now have, grossing a million and a quarter dollars annually, is pretty good-sized; but it is a baby compared to what it should be.) Furthermore, it must be built on the finest standard of American business. As we have said before, you are no longer individual entrepreneurs only. You have the trusteeship for a great commercial operation. In that operation the doctors of this State must take a justifiable pride. Frankly, many of them are ashamed of it.

Experienced Leadership Necessary

Building such a structure quickly is not a matter of magic, but neither is it a job for busy doctors. It requires a leader who can command and maintain the confidence of the rank and file. It requires a man with the experience and ability to evolve a reorganized and expanded plan. Such a man must be as thoroughly trained in his field as you are in yours. He must be experienced in sales and marketing, finance, public relations and in general corporate administration. There are a lot of good amateurs on the fringes of the medical world. But if you want a man to inspire your membership, the staff, and the public, it requires more than an amateur. We think it safe to say that the men in the medical world are largely amateurs in business. What you need is a professional businessman.

We were not instructed to investigate your present plan, the California Physicians' Service. The public and the doctors are our only soure of information. However, we do know you have hired departmental specialists difficult to replace. . . .

What you lack is the over-all leader: to co-ordinate the activities of these specialists; to make general plans and assist them with their own planning; to inspire them and you; to create policies, subject to your approval, of course, through which to achieve your objectives.

In evolving the problems of unifying the profession, the services of such a leader will be invaluable. For the problem of unification is very largely one of education. The educational campaign among members (which, incidentally, will never be concluded), can be placed squarely in his hands. Such an assignment will produce no terror in him.

Your second job in cleaning house is to improve your public and professional relations. In discussing this, let me assure you our judgment has not been influenced by anyone. We are accustomed to pressure. Actually, I have been surprised at the lack of pressure and you might be interested to know that no officer and no member of this Association had any prior knowledge of what I was to say here today or what recommendations we will make to you.

A Public Relations Program

The first part of your public relations concerns the interrelationship of your own members and also the relationship of leadership to them. In general, your membership is divided into the three groups, common to any association. First, those who are actively in favor of your program for organized medicine in this state. Second, those who are against it by virtue of honest convictions. And third, the scoffers or the "aginners" who are against any program no matter what it is.

Don't spend any time on this latter group—it is time completely wasted. Spend all your time with honest men. Take the trouble to sit down with them in a friendly manner. Perhaps they have something to contribute. Or they may not know the facts. The probability is, however, that they are quibbling about details and missing the forest for the trees. (This is often the great indoor sport of doctors when discussing problems of public relations and pre-payment plans. They argue about details and miss the main objective.) But if you are open-minded and can discuss the problem with rancor, they will be open-minded too, and you will reach a satisfactory agreement.

The second part of your public relations program concerns relations between executives of the Association and county groups and the intermural relations between county groups themselves. . . .

We are quite safe in reporting to you that among those very few counties where there has been trouble in the past, the majority of the leadership is now ready for the peace table. If, in meeting with them, you recognize there must have been a real reason for their anger in the first instance, there is no mutual problem that cannot be satisfactorily solved.

The third part of your public relations program concerns your relations with hospitals and the Blue Cross Plans. Speaking for myself, nothing has given me greater concern than the policy which you will ultimately evolve. Please remember that, as far as the public is concerned, the problem of medical care involves both the doctors and the hospitals and, indeed, everything which contributes to the high cost of medical care. Therefore, the hospital problem is of paramount importance to your cause. . . .

Federal Legislation

In Washington the Murray-Wagner-Dingell Bill lies in committee. As we said before, it probably will stay there. But, as Mr. Fulton Lewis has pointed out, there will be other Murrays and other Wagners and other Dingells, who will bring forth other bills more subtly drawn to place control of medicine in bureaucratic hands. You should remember there is no vote-getting device so efficient as the one which—posing as purely humanitarian—offers the people something they do not have, but want very much and believe they can get no other way.

The promoters of such bills have only one serious obstacle: groups like yours which will provide something better than the politicians can offer. Their only hope in defeating you will be to impeach you, to point to your errors as proof that control cannot be left in your hands. If the doctors and the hospitals get into a fight you will provide them with precisely the ammunition they want. Therefore, amicable and increasingly sympathetic understanding between doctors and hospitals is worth anything it costs. The current threat to such an understanding is what you do concerning the method by which hospital coverage is obtained by the California Physicians' Service. . . .

Summary

In conclusion, let me boil all of this down to practical steps upon which you can take decisive action at this or subsequent meetings. Here are our recommendations:

1. That you hire a splendid business executive administrator; that you recognize there are men who can get the job done of covering several million of people at low cost and at high speed.

Such a man is not Dr. X. Y. Z.'s neighbor. He is a man whom you will pick because of his national standing. You cannot and must not accept any less. He is a man of business—not of medicine or an allied profession. Big business long ago adopted the policy of not worrying about an administrator's technical knowledge. He can get all the technical knowledge he needs from the executives under him. . . .

Only by getting a professional business administrator can you circumvent the dismaying problems which will otherwise face you. But a man with the "know-how" of handling business and administrative problems can make life easy for you and lead you quickly to your objectives. We recommend the immediate employment of such a man. If you need help in obtaining candidates for the job, we shall be happy to suggest several.

2. We recommend the formation of an organization to deal with your members and member societies throughout the State, so that every one of your members can conscientiously decide the extent of his co-operation on the same full information your Council has for its own decisions. . . .

One of the duties of your new executive, ladies and gentlemen, will be to direct the detail and the policies of C. P. S. As busy doctors this is no job for you. For your own sakes, keep looking at the forest and not at the trees. . . .

3. We recommend the division of all councils, both in this Association and in the several county medical societies, into three groups, responsible respectively for: 1, the progress of scientific medicine; 2, medical economics; and, 3, public relations.

These are actually the most important functions you have. You have neglected the last two, namely, the medical economics and public relations. Now they are of vital importance to you and must be neglected no longer. . . .

These three recommendations may seem rather simple and somewhat obvious. If they were complicated we would be suspicious of them. They represent, as far as we are concerned, all the treatment you are ready for at this time. If your body was whole, so to speak, we could give you much more. But until you are unified in thought you cannot be unified into a tremendous program. These three recommendations represent the method by which unification and house cleaning is to be quickly accomplished. When this job is done, then and then only will you be ready to go out with a public program to get capital, labor, the farmer, and the people solidly behind you. That is the time when you will take your story to the people. That is the time when we suggest you again call upon competent public relation counsel. Then advertising and all the tools of mass selling can be united into a mighty program. You do not need us until then. The money which you would spend to retain us for the intervening period had better be put into a war chest for future use.

In Conclusion

Now, your real problem is to gain strength and unity from within yourselves. You have a long way to go. The problem of whipping Federal medicine, in our viewpoint, is far less difficult than the chain-store situation and others of recent memory. The weapons are at hand. All that has been lacking so far is the will to fight—not on the part of your leadership, but on the part of the rank and file. All that is lacking is the stamina to adopt a common viewpoint, to accept the facts realistically.

We want you to visualize medicine on the move—a militant, united medicine. You have the power to make the move that will thrill you and the people of the State. Imagine every Rotary Club, Farm Bureau, newspaper and all of the people being told of this militant move of a united medicine to solve a great human problem.

Imagine the whole State organized into a great co-operative campaign under your leadership.

Imagine, if you will, the repercussions on each com-

munity, large and small, as this story is told—a story not duplicated elsewhere in the nation up to that time.

Imagine the effect of this on your colleagues who will return from the War. Undoubtedly, they will praise you for carrying on, instead of hanging on.

Imagine the blueprint you will be making here in California for other States to follow.

Yes, ladies and gentlemen, responsibility is a twin and the name of its brother is opportunity. They go hand in hand. Seize, then, both the opportunity and the responsibility. We promise you, of course, difficulties and heartbreak, but also thrills and satisfaction such as you have never before experienced.

And we hold out to you a result which will crown your careers with new dignity and new prestige.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary

Physicians Licensed May 12, 1944

April Examination

Balfour, Donald Church, Jr., Northwestern U., M.B. 1942, M.D. 1943, Mayo Clinic, Rochester, Minn.

Barr, Maxwell Michael, U. of Minn., M.B. 1943, University Hospitals, Minneapolis, Minn.

Becker, Sidney Forbes, U. of Minn., M.B. 1943, 25 Sidney Place S.E., Minneapolis, Minn.

Bosma, James F., U. of Mich., M.D. 1941, 500 Harvard St. S. E., Minneapolis, Minn.

Brooksby, Wilford Armond, Northwestern U., M.B. 1942, M.D. 1943, Mayo Clinic, Rochester, Minn.

Carr, David Turner, Med. Col. of Va., M.D. 1937, Mayo Clinic, Rochester, Minn.

Correa, Dale Homer, U. of Mich., M.D. 1942, Mayo Clinic, Rochester, Minn.

Cox, William Foscue, Med. Col. of Va., M.D. 1942, Mayo Clinic, Rochester, Minn.

Evert, John Andrew, Harvard U., M.D. 1942, Mayo Clinic, Rochester, Minn.

Ewing, John Deeny, U. of Minn., M.B. 1943, 817 Cleveland Ave. S., St. Paul, Minn.

Flasher, Jack, U. of Minn., M.B. 1943, M.D. 1943, Mayo Clinic, Rochester, Minn.

Flashman, Forrest Llewellyn, Northwestern U., M.B., 1941, M.D. 1942, Mayo Clinic, Rochester, Minn.

Folsom, Louis Bartlett, U. of Minn., M.B. 1943, Northwestern Hospital, Minneapolis, Minn.

Freeman, John George, U. of Minn., M.B. 1943, Miller Hospital, St. Paul, Minn.

Gordon, Norvan Floyd, U. of Wis., M.D. 1943, Mayo Clinic, Rochester, Minn.

Hinchey, John James, Baylor U., M.D. 1940, Mayo Clinic, Rochester, Minn.

Holmes, Chester Leon, U. of Tenn., M.D. 1942, Mayo Clinic, Rochester, Minn.

Jackson, Hunter Sheppard, Med. Col. of Va., M.D. 1942, Mayo Clinic, Rochester, Minn.

Johnson, Frank Edward, U. of Minn., M.D. 1943, 1516 N. Broadway, New Ulm, Minn.

Kadish, Arnold Henry, Wayne U., M.D. 1943, Mayo Clinic, Rochester, Minn.

Kirschbaum, Arthur, U. of Minn., M.B. 1943, M.D. 1943, 318 Harvard St. S.E., Minneapolis, Minn.

Kurzweg, Frank Turner, Harvard U., M.D. 1942, Mayo Clinic, Rochester, Minn.

Levy, Marvin Shephard, U. of Pa., M.D. 1940, Mayo Clinic, Rochester, Minn.

Long, Mary, U. of Louisville, M.D. 1943, Mayo Clinic, Rochester, Minn.

Margulies, Harold, U. of Tenn., M.D. 1942, Mayo Clinic, Rochester, Minn.

Mixer, Harry W., U. of Minn., M.B. 1943, University Hospitals, Minneapolis, Minn.

Nielsen, Wendell Lorenzo, U. of Pa., M.D. 1942, Mayo Clinic, Rochester, Minn.

Nord, J. Erling, Temple U., M.D. 1943, 210 Gramercy Ave., Minneapolis, Minn.

Perkins, Roy Frank, U. of Ill., M.D. 1941, Mayo Clinic, Rochester, Minn.

Rentiers, Paul Louis, U. of Alberta, M.D. 1942, Mayo Clinic, Rochester, Minn.

Semsch, Robert Daniel, U. of Minn., M.B. 1943, 1917 Colfax Ave. S., Minneapolis, Minn.

Strakosch, Ernest Anthony, U. of Minn., M.D. 1942, 2449 S. Dearborn, Chicago, Ill.

Suter, Stanley Charles, Jefferson Medical College, M.D. 1936, Mayo Clinic, Rochester, Minn.

Swain, Jean Margaret, U. of Minn., M.B. 1943, University Hospitals, Minneapolis, Minn.

Triolo, John Victor, Long Island Col. of Med., M.D. 1941, Mayo Clinic, Rochester, Minn.

Webb, Margaret Alexander, U. of Texas, M.D. 1942, Mayo Clinic, Rochester, Minn.

White, Ellison Fred, Jr., U. of Tenn., M.D. 1942, Mayo Clinic, Rochester, Minn.

Wilson, James McCrory, U. of Colo., M.D. 1943, Mayo Clinic, Rochester, Minn.

By Reciprocity

Bauer, Eugene Leo, U. of Ill., M.D., 1942, 1359 N. Hamline Ave., St. Paul 4, Minn.

Smith, Norvin Richard, U. of Neb., M.D. 1935, 1009 Nicollet Ave., Minneapolis, Minn.

National Board Credentials

Briggs, Natalie Maria, Long Island Col. of Med., M.D. 1940, Mayo Clinic, Rochester, Minn.

Giffin, Mary Elizabeth, Johns Hopkins U., M.D. 1943, Mayo Clinic, Rochester, Minn.

Haunz, Edgar Alfred, U. of Buffalo, M.D. 1943, Mayo Clinic, Rochester, Minn.

Kirklin, Margaret Katherine, U. of Buffalo, M.D. 1942, Mayo Clinic, Rochester, Minn.

Kolouch, Fred, Jr., U. of Minn., M.B. 1940, M.D. 1941, 817 Essex St., S.E., Minneapolis, Minn.

Varney, James Howard, U. of Ore., M.D. 1942, Mayo Clinic, Rochester, Minn.

Minnesota State Medical Association

Ninety-first Annual Session

April 12, 13, 14 and 15, 1944

Rochester, Minnesota

HOUSE OF DELEGATES

Assembly Room
Mayo Clinic
Wednesday, April 12, 1944

(Continued from September issue)

Speaker Will then called for the report of the Reference Committee on Officers' and Councilors' Reports, Dr. S. A. Slater of Worthington, chairman. The following reports were considered.

REPORT OF SECRETARY

Wartime duties have taken precedence over all else in the State Office during the past year. At the same time, regular services to members have continued without interruption, though in these, too, the emphasis has been upon wartime problems in medical practice and the public health.

Secretarial and administrative work connected with the activities of the State Procurement and Assignment Service Committee have been heavy and have largely centered in the office of the association.

As the time approaches when all of the men who are eligible, and classified as available, leave for active duty, it is probable that the amount of work will begin to lessen somewhat, though there will continue to be the periodic assignment of interns and residents from among medical school graduates, in accordance with tightening regulations.

The over-all situation, so far as civilian medical services were concerned, may be regarded as satisfactory at the present time in Minnesota. That does not mean, however, that there is not a serious shortage, here and there, in rural districts, which has been made worse recently by the death or collapse of some older men who have been carrying the burden of practice for younger colleagues in the service. Several appeals for assistance have been made to the State Office by citizens' committees from these communities and every source of physicians who might locate or relocate in these districts has been explored, in response to these appeals. In some cases assistance has been provided. In others it has been impossible to find anyone who could move in and assume the responsibility. The only alternative, in these instances, is for physicians in neighboring communities to take over. With the assistance of the Councilor of the district, attempts have been made to work out a definite plan for such service on a cooperative basis. There are still a few towns in the state, however, where no such arrangements have been made and where residents are from 20 to 30 miles from physicians. In these cases, agreements among neighboring physicians are urgently needed so that a part-time, rotating service can be made available in each center with the purpose of giving these people medical service quickly in time of need and at a price they can afford to pay.

The importance of this aspect of our wartime duty to the civilian population cannot be overstated. If any concerted demand for outside aid should arise from the citizens of any section of the state, the chances are that it would not fall upon deaf ears. Help would be forthcoming by some means, probably through federal aid, and, rightly or wrongly, the physicians and organized medicine would be charged with inability or unwillingness to do anything about it themselves.

The time has come, undoubtedly, for a thorough study of medical and hospital needs in each separate community of the state. Such a study would take into account population, transportation and hospital facilities and inadequacies. It would constitute the indispensable foundation for sound postwar planning in Minnesota and would serve as the only reliable guide for distribution of young physicians who will go into practice after separation from the military forces. The Committee on Postwar Medical Services which was created this year by the Council of the Minnesota State Medical Association at the request of the President, will undoubtedly begin work on this important problem without delay. Many communities and groups in the state are already at work on plans of their own and it is likely that new medical facilities will play a significant part in their plans.

The Minnesota State Medical Association again assumed a major responsibility in making arrangements for the National Conference on Medical Service, this year, inasmuch as Dr. Burnap served as secretary in 1943 and as president in 1944 of the Conference. A record attendance of 325 registered at the meeting and the major objective of more than two years' effort on the part of Minnesota leaders—an office of information for medicine in Washington—was on the way to realization when the Conference ended. An executive committee of which Dr. Burnap was elected chairman was also formed to provide a permanent, continuing organization for the conference.

The North Central Conference, comprising state medical associations of Wisconsin, Iowa, North and South Dakota, Minnesota and Nebraska, held its second annual meeting in Minnesota in January and likewise organized itself on a permanent basis in order to facilitate effective joint action on medical problems of this area. An executive board, of which your executive secretary was made the secretary, was appointed at this meeting and a close contact with officials in nearby states was thus created which will, it is hoped, become a working reality in dealing with common war and postwar problems.

The committees of the association have been active in spite of wartime burdens carried by individual members. Educational activities for association members and the public, most of which are carried on through the State Office, have been maintained without interruption. The subject-of-the-month program, the *News Letter,* the question and answer service for weekly newspapers and the radio program are among these services. This volume of work could not have been done without the loyalty and devotion of the headquarters staff. Because of the difficulty of getting extra help, the girls in the State Office have willingly worked long hours overtime, as well as holidays and Sundays, to get the work done. They deserve the thanks and appreciation of the secretary and members.

The list of members in service has been kept as nearly correct and up to date as possible and the State Office has maintained contact with most of them so as to keep them informed on what is going on at home in Minnesota and to be ready to implement association

plans for facilitating their ultimate return to private practice when the war is over.

The future of medical practice and of the men who are now in service will obviously be greatly affected by what Congress may or may not do toward including medical and hospital services in the domain of government services to the people. What Congress does, will, in turn, be affected by what medical men do now to educate the voters on the essentials of good medical service and on their own ability and willingness to foster a sound public health program.

It seems apparent that the Wagner-Murray-Dingell Bill, now before Congress, will not pass at this session. But problems of quantity, costs and distribution will remain for solution even if this particular bill fails of action. And these problems are being discussed by all men these days who think in terms of social advancement in a new world.

The first step for us in Minnesota is clearly to see that the best service possible under wartime limitations, is made available everywhere in the state. The second is to begin our own studies of future needs in Minnesota without delay so that, as physicians, we may be ready with sound workable recommendations for extensions and improvements. Thus we shall retain initiative and control within the state where it belongs, and we shall build confidence in our policies and trust in our leadership for the future.

B. B. Souster, M.D., *Secretary*
R. R. Rosell, *Executive Secretary*

REPORT OF TREASURER

The attached statement of cash receipts and disbursements for the year ending December 31, 1943, was made by Shannon and Byers, certified Public Accountants.

A comparative summary of the finances of the association in 1942 and 1943 is shown below. It will be noted from this comparison that the income from dues was somewhat increased in 1943 over 1942 in spite of the fact that a large number of members left for duty with the Armed Forces during the year. Dues for these members were remitted by the House of Delegates in 1942, but the assessment of five dollars for each member, levied the same year, has more than offset the loss for 1943 and may be expected to offset future loss of income, also, from that source.

In spite of the fact that 1943 was a legislative year, expenses for the year were only slightly higher than those for 1942 and income from the annual meeting was increased so that the year ended with a net surplus of $7,160.24 for 1943 as compared with $1,817.79 for 1942. The sum of $5,800.00 was accordingly transferred to the reserve account by recommendation of the Finance Committee with the approval of the Council in its December meeting.

The financial condition of the association, therefore, remains excellent and the prospect for the future good.

The Permanent Investment Fund of the association remains under the management of the First National Bank and Trust Company of Minneapolis and the total value of the Fund is placed at $57,091.15 at the end of 1943.

COMPARATIVE SUMMARY

	Year 1943	Year 1942
INCOME:		
Income from dues	$38,432.34	$33,500.83
Other income	5,318.02	3,404.55
	$43,750.36	$36,905.38
EXPENSES:		
Special committees	$17,776.72	$13,666.74
Special appropriations	100.00	1,417.82
Conferences and meetings	1,074.33	1,351.84
Administrative	17,639.07	18,651.19
	$36,590.12	$35,087.59
NET INCOME:	$ 7,160.24	$ 1,817.79

BALANCE SHEET, December 31, 1943
Minnesota State Medical Association
From the Auditor's Report

ASSETS		*December 31, 1943*
CURRENT ASSETS:		
Cash in banks	$16,213.28	
Bruce Publishing Company:		
Due on contract	2,046.37	
Advertising accounts receivable	882.75	
Total current assets		$19,142.40
INVESTMENT FUNDS:		
Bonds, at cost	42,355.30	
Stocks, at cost	9,175.92	
Agency account	5,559.93	57,091.15
H. M. JOHNSON MEMORIAL FUND SAVINGS ACCOUNT		2,259.21
OFFICE EQUIPMENT	5,879.12	
Less reserve for depreciation	2,242.37	3,636.75
TOTAL ASSETS		$82,129.51
LIABILITIES AND NET WORTH		
DEFERRED INCOME:		
Dues collected in advance	4,540.00	
Exhibit space rentals collected in advance	4,780.00	
	9,320.00	
Less prepaid expenses	1,722.30	7,597.70
H. M. JOHNSON MEMORIAL FUND		2,259.21
RESERVE FOR TUBERCULOSIS COMMITTEE		531.30
NET WORTH:		
Permanent investment	57,091.15	
Current surplus	14,650.15	
		71,741.30
TOTAL		$82,129.51

W. H. Condit, M.D., *Treasurer*

REPORT OF CHAIRMAN OF THE COUNCIL

The Council has concerned itself to a considerable extent with national issues and policies this year because events in Washington have been of immediate interest to every individual and every society in the country.

For that reason the Council devoted much of its time at the May meetings to discussions which shaped the policy of the Minnesota State Medical Association as to the projected Committee on Medical Care. This committee materialized at the subsequent meeting of the House of Delegates of the American Medical Association in the creation of the Council on Medical Service and Public Relations. For this step forward and for the later establishment of the Washington Bureau of Medical Economic Research under auspices of the Council, great credit has been given to Minnesota leaders who initiated the movement. It is only fair to say, however, that the vigorous response of medical societies all over the country was an equally important factor in achieving a better machinery for conducting the public policies of medicine on a national scale.

The program for emergency medical and hospital care of wives and infants of enlisted personnel in the armed forces, popularly known as the EMIC program, has been under Council consideration at intervals during the past year. The Council and House of Delegates at the annual meeting last year approved a program drawn up jointly by the State Board of Health and a committee of the association under the chairmanship of Dr. R. L. J. Kennedy of Rochester. This program was modified, in accordance with subsequent objections made by the U. S. Children's Bureau, and again approved at a special June meeting of the Council.

Changes in the program were recently made necessary as a result of new regulations from the Bureau and an altered plan was drawn up and presented by Dr. Kennedy in February to the Council. The outstanding change made in the program at this time was the increase of the maximum fee allowed for obstetrical care from $40 to $50; but with the corresponding requirement

that the physician, for this fee, will take care of all intercurrent illness during the period of gestation and delivery. Approval of the Children's Bureau for this tentative alteration had not been secured when this report was drawn up. The Council stipulated, however, that the preamble to the plan should state even more emphatically than in the first instance, that the medical profession of Minnesota concurs in this program only as an emergency measure which will be abandoned when the war is over; that it does not approve the principle nor organization of the plan in itself but is willing to coöperate only as a patriotic duty in an emergency war measure.

Much opposition to the program has been expressed with justice by medical associations all over the country, both as to principle and as to policies of the Children's Bureau. These policies have resulted in a wide variation of fees in different states, often in the same section of the country. These differences will undoubtedly be ironed out; but the demand to give the aid on an allotment rather than a service basis will nevertheless be brought more vigorously before Congress when new appropriations for the program are voted.

The new Occupational Disease Law enacted by the Minnesota State Legislature at its last session called for a panel of 15 physicians to be appointed by the Governor, the Dean of the University Medical School and the Minnesota State Medical Association. Accordingly, a committee of the Council was appointed, at the time of the last annual meeting, to draw up a tentative list of names for action by the Council and this list was presented to the Governor and the Dean at a special session in June. With one or two additions of his own, the Governor accepted the Council's list and the Dean approved. It was decided, however, that the term of office was to expire March 1, 1945, although no term was specified in the law, and that the matter of tenure was to be brought to the attention of the Legislature at its next session.

A prepayment plan for medical services to clients of the Farm Security Administration was approved as an experiment by the Council more than two years ago and has been in operation in Morrison and Ottertail counties, and later in Mille Lacs County, since that time. Physicians in each of the counties are co-operating with the experiment, chiefly for the sake of valuable experience with this form of payment. It was reported at a recent meeting of the Council, however, that the plan had lapsed in Mille Lacs County and a Wilkin County plan was approved as a substitute. But it was also agreed that, for the present, at least, the experiment should be limited to Morrison. Ottertail and Wilkin counties. A suggestion on the part of the FSA that low income families who are not clients of the FSA be admitted as subscribers in these counties was not approved for the reason that there are relatively few low income farmers anywhere at the present time and ample provision is already made by the Division of Social Welfare for their care.

The problem of medical care for Jamaican and Mexican laborers brought into Minnesota to work in canneries and beet sugar fields has been brought to the attention of the Council several times during the past year. These workers have been variously under the jurisdiction of the Department of Agriculture, the War Food Administration, the Department of Labor; but have no establishment as residents and are consequently technically ineligible for care under the Division of Social Welfare. The Midwestern Agricultural Workers Association, incorporated last year in Indiana, was designed as a medium through which arrangements could be made for medical service of these workers in the states where most of the workers were to be employed. The association applied for permission to operate in Minnesota but was refused on legal grounds and no provision now exists though more than 3,500 workers are expected in Minnesota this summer. A solution to the problem remains to be found but it is hoped that some way can be worked out for handling payment of fees to physicians who take care of these foreign laborers.

The Council has listened to proposals from many sources during the past year. The resolution from the Renville County Medical Society, calling for limitation of government hospital building for disabled veterans, was referred to the Committee on Hospitals and Medical Education for further study and recommendation.

Others, such as preliminary plans for putting to use in Minnesota new federal funds available for physical rehabilitation among civilians, were outlined by officials of state offices in charge of the programs here. No official action was taken by the Council other than to approve full use of the Medical Unit in the Division of Social Welfare for medical services involved.

A plan to permit hospitals to buy hospital equipment and instruments at cost when the war is over and army hospitals are dismantled was approved and referred to the Minnesota Hospital Association.

Routine duties such as recommendation and approval of candidates for affiliate membership was carried on as usual. Dr. E. W. Hansen of Minneapolis was named in place of Dr. J. M. Hayes who moved from Minnesota to California, as delegate to the American Medical Association.

Dr. E. M. Hammes was named to the Finance Committee of the Council to replace Dr. Jones who became president of the association in January. Dr. C. L. Sherman of Luverne was recommended in first place for reappointment to the State Board of Medical Examiners.

Two important new committees were formed with Council approval. One was the new Committee on Nervous and Mental Diseases; the first report is in the hands of the delegates at this meeting.

The other is the Committee on Postwar Medical Services which the Council created at its December meeting, at the request of President Jones. The work of this committee is fundamental and is only now getting under way. Soon, we hope, hundreds of youny physicians will be returning to practice in Minnesota. New possibilities for building needed facilities will open up and for improving our services to the people. We must be ready to direct the location and relocation of physicians after the war where they are needed most; to assume leadership and responsibility in seeing that they have facilities and that complete medical services are supplied everywhere at a price that people can afford to pay.

As this committee is now organized, the Council itself is the central committee and each councilor is to designate one man from each county in their districts.

Other state and county groups are now drawing up their plans for community and state expansion after the war. These plans will not leave medical facilities out of consideration unless they are satisfied that the doctors, themselves, are ready to assume the responsibility.

Your Council deserves a word of commendation. They are very able, busy men, giving their time and money to the service of the Association. The demand upon their time is large, and upon their minds and judgment greater. They have met the present emergencies in a remarkable way. I can say this with good grace because, as Chairman, it is my function to sit back and watch the wheels go round.

I should also like to extend a word of appreciation to the Executive Secretary and his staff in the State Office. Their loyalty and devotion has made it possible for us to maintain our expanded program in spite of the difficulties and restrictions of these times.

W. L. Burnap, M.D.,
Chairman of the Council

* * *

REPORT OF COUNCILOR OF THE FIRST DISTRICT

One of the most urgent problems which has confronted this country since the war began has been caused by the constant demand of the Government for physicians

to supply medical care for the armed forces. This has been responsible for a reduction in the number of physicians left to take care of the sick at home, which in many instances has reached a precarious minimum. The experience of the physicians of this district is similar to that of the physicians of other parts of the state and nation.

After communicating with the secretaries of all the component medical societies, the following information is now available:

Until March 3, 1944, over 360 physicians had been released from the first district for service with the armed forces.

From Freeborn County five physicians have gone into the service, and nineteen are left to carry on the work at home. This county covers an area of 735 square miles, and its population is approximately 32,000. The ratio of physician to population is 1 to 1,700.

Six physicians have left Goodhue County, and eighteen remain on duty at home. The area of this county is 767 square miles, and its population is about 32,000. The ratio to population is 1 to 1,800.

Mower County has a population of approximately 36,000 and the area is about 711 square miles. From this county five men have left for military duty, and twenty-one remain to take care of the civilian population. The ratio of physician to population is 1 to 1,700.

In Rice County there remain twenty-two active physicians, and two are in the service. The area is 495 square miles. The population is about 32,000. The ratio of physician to population is 1 to 1,500.

Steele County has sent three men to war, and there are twelve left. The area of this county is 431 square miles, and the population is approximately 20,000. The ratio of physician to population is 1 to 1,700.

Wabasha County has 541 square miles, and it has a population of 18,000. From this county four physicians have gone into the service, and twelve remain at home. The ratio of physician to population is 1 to 1,500.

Winona County has nineteen physicians remaining on duty, but eight have been released for military service. The area in square miles is 637, and the population is 38,000. The ratio of physician to population is 1 to 2,000.

The records of the Olmsted-Houston-Fillmore-Dodge County Medical Society show that, as of this date, more than 325 of its members are now on active duty in the army and navy. Two station hospitals, now on foreign duty, have been manned by members of this society.

The ratio of physicians to population for the entire first district, exclusive of Rochester, is approximately 1 to 1,700.

The interest of the component medical societies in state and national problems has become increasingly active. All societies are holding their meetings and are devoting their attention to the pressing problems which obstruct their usual activities. Among these problems, one which has become important, is the Emergency Maternal and Infant Care Program, and the reaction of the state organization as a whole is reflected with fair accuracy in the attitude of the physicians of this district. In most instances, the scheme is tolerated with and admirable coöperative spirit. The plan is regarded generally as an emergency expedient and the profession is willing to accept it on that basis. With one exception, all the counties in this district are trying to conduct their practice in accordance with provisions of the Children's Bureau. At this time the physicians of Mower County have under way a plan of their own, which appears, to them, to offer more to both the physician and the patient than the national program offers. Yesterday (March 3) Dr. A. J. Chesley, Secretary of the State Board of Health, Dr. V. O. Wilson, Director of the Division of Child Hygiene, Minnesota Department of Health, and Dr. R. L. J. Kennedy, Chairman of the Committee of the State Association serving in an advisory capacity, on Emergency Maternal and Infant Care matters, to the State Board of Health, attended a meeting of the officers and members of the Mower County Medical Society for the purpose of discussing their problem. Apparently one of the objections to the Emergency Maternal and Infant Care plan is the fact that the Children's Bureau does not pay the money to the mother and another difficulty is owing to the delay in receiving the fee as well as the failure to obtain the entire fee in some instances. At the time that this report is being prepared no conclusions have been reached.

The Emergency Medical Service of Civilian Defense is being continued as the subcommittee on medical aid of the Committee on Disaster Preparedness of the American Red Cross.

We have been unfortunate in losing the valuable services of Dr. L. Breslow, who had served so efficiently as Director of the Minnesota Department of Health, District No. 3. Doctor Breslow is now serving as epidemiologist with the Post Surgeon of San Francisco Port of Embarkation. Since the departure of Doctor Breslow, the official work of the district has been carried on by Dr. F. M. Feldman, City Health Officer of Rochester.

L. A. Buie, M.D.
Councilor, First District

REPORT OF COUNCILOR OF THE SECOND DISTRICT

The medical profession in this district is taking the hard work that they have to do in stride. Members are doing their best to keep up the work of caring for their patients, and at the same time not neglecting their scientific meetings which are held quite regularly although with a slightly smaller attendance, as so many of our colleagues are in the Service.

I am also very happy about the interest shown by some of our men in opposing the Wagner-Murray-Dingell bill before Rotary, Lions, and Community Clubs, and in presenting resolutions which have been passed and forwarded to our congressmen and our state Senators from these organizations. This kind of work educates the ordinary layman in the community where this is done and I believe, if it could be adopted all over the state, it might prove to be of great value in the future.

Dr. R. C. Hunt of Fairmont, Minnesota, was the first man, as far as I know, in my district to do this; and he deserves a great deal of credit.

L. L. Sogge, M.D.
Councilor, Second District

REPORT OF COUNCILOR OF THE THIRD DISTRICT

The Third Councilor District has come through this year of emergency without any serious difficulty. We have been spared the occurrence of epidemics of any consequence, and the weather has been favorable for making country calls. There seems also to have been an understanding on the part of the public that all unnecessary calls should be avoided, thus giving the doctor more time to spend in his office or in the hospital.

The immunization programs, carried out in the past few years, have paid good dividends in holding the occurrence of preventable diseases to a minimum. The value of immunization seems to have impressed itself upon the public to the extent that very little urging is needed to extend the program. There has been no increase in the number of cases of tuberculosis. Credit for this favorable condition may, to a large extent, be given to the campaigns that have been waged against this disease.

Due to lack of time on the part of the physicians, and due also to difficulties of transportation, the number of medical meetings has been curtailed, but a sufficient number has been held to carry out all the necessary business transactions. The attendance at these meetings has been surprisingly good, thus showing that there has been no lack of interest in medical affairs.

The members serving in the armed forces have not been forgotten. Christmas greetings have been sent them, and they have also received copies of the minutes of the meetings. It is to be hoped that these men who have shown their loyalty to their country, and to the profession, by carrying their life saving work to the front lines will be with us soon to receive the hearty welcome which they so richly deserve.

C. M. Johnson, M.D.
Councilor, Third District

REPORT OF COUNCILOR OF THE FOURTH DISTRICT

The fourth district finds itself in good condition as far as membership and interest are concerned. The principal matters for adjustment are still, the entering into Service of as many doctors as were available, and second, the keeping up of a proper supply and distribution of civilian practitioners. These matters usually can be adjusted, and we have no trouble in that regard.

So far as the matter of emergency maternity and infant care is concerned the doctors are quite willing to do this work for the sake of patriotism as well as humanity; but the restrictions placed upon it make it time-consuming, uncertain, and rather unsatisfactory, so that the men do try to shy away from it, if possible, and often treat these patients as charity patients rather than bother with the usual reports.

One of the outstanding meetings of the year was the conference between professional groups and senators and congressmen, which occurred August 16, which helped a lot to foster mutual understanding and to show that there is plenty of right thinking if it only can be gotten across to the influential sources. The committees to assist in the national program and representing the various congressional districts have been set up, and they should do much good.

We go into another year as strong professionally as ever before, even though the lines are somewhat extended and while often burdensome, the work is done with good cheer.

A. E. Sohmer, M.D.
Councilor, Fourth District

REPORT OF COUNCILOR OF THE FIFTH DISTRICT

Everything has been progressing so peacefully and satisfactorily in the Fifth District that there is nothing special to report.

E. M. Hammes, M.D.,
Councilor, Fifth District

REPORT OF COUNCILOR OF THE SIXTH DISTRICT

More than 170 members and a like or greater number of non-members and interns have left Hennepin County and the other counties of this district, to date, to join the armed services.

These men are now serving in hospitals and with the combat troops in all of the important theaters of War from New Guinea and the Pacific Islands to Italy. Two have been killed in action. Two died in service. Many have served under fire and in danger of bombs, torpedoes and sinking by submarine. Nearly all are now overseas or on their way to foreign service.

Older men who remain on duty at home are working longer hours and accepting heavier responsibilities; but no serious shortage of medical service is evident, yet, either in Minneapolis, rural Hennepin or Wright counties.

Plans are under formation for the return of all of our members when the war is over and everything possible will be done to facilitate their reëstablishment in practice. In the meantime, it is gratifying to note the large number of younger men, ineligible for military service and of older men returning from retirement, or enlarging their responsibilities as a result of the war, who are applying for actual membership. The largest number of applications for the last four years has been made this year to the Hennepin county society. The society is to be complimented on its program, and its timely and readable bulletin which has done an excellent job keeping members informed on the movements and activities of the men overseas.

A. E. Cardle, M.D.,
Councilor, Sixth District

REPORT OF COUNCILOR OF THE SEVENTH DISTRICT

During the past year several notable developments have occurred in medical circles in this district. First, membership in component medical societies has decreased appreciably as a result of loss of physicians to the Armed Forces. Secondly, both attendance at medical meetings and the number of medical society meetings have decreased. And finally, while interest of physicians in all economic matters except the Wagner-Murray-Dingell bill has diminished, various circumstances have operated against arranging good scientific medical programs.

In the Stearns-Benton County Medical Society, membership has decreased from 52 to 45. In this society, according to the Secretary, Dr. J. N. Libert, due to poor attendance and difficulty of arranging programs, meetings have been held irregularly when possible rather than once each month as has been customary in past years. An effort is to be made to arrange meetings regularly, once every two months.

Membership in the Upper Mississippi Medical Society, the other component medical organization in this district, has decreased from 93 to 71 as reported by the Secretary, Dr. G. I. Badeaux. Here again meetings have been reduced from four to two a year with a recent decision to revert to four meetings a year. At the last meeting of this organization, a spontaneous discussion about government controlled medicine and the Wagner-Murray-Dingell bill engendered intense interest.

Various factors responsible for poor meeting attendance and difficulty in arranging attractive programs have received serious consideration of the officers of component societies. Such factors include gas and tire shortage and restrictions, decreased membership resulting from war influences, lack of time of members to prepare papers or articles, increased teaching load of the Medical School Faculty, and ill-health of physicians resulting from overwork or exhaustion. With these circumstances generally existent, hope has been expressed that programs and interest of physicians may be maintained even if assistance of the State Association or such a device as a speakers bureau is necessary.

Edwin J. Simons, M.D.
Councilor, Seventh District

REPORT OF COUNCILOR OF THE EIGHTH DISTRICT

Today the important question is, "How are the needs of the war being met?" I believe the doctors of the Eighth District can feel pride in the way their responsibilities have been discharged. We wish to pay tribute to the fine work done by the Procurement and Assignment Committee of the State Society and the Local Units. There has been extremely little criticism concerning their decisions. The duties of the committee have been made easier and more pleasant by the willingness of all the doctors in the district to serve in the place for which they are best fitted, whether it be in the army or the ranks at home. Today, the doctors on the home front are cheerfully carrying a very heavy burden.

In an agricultural region like the Eighth District, there are no large cities, but many widely separated small ones. A number of sections from which the only doctor in a small town has been taken for military service, have been left without reasonably available medical service. Though none of the doctors, as far as I know, refuse a call within a radius of ten to thirty miles, the expense to the patient is very high and services are often not adequate. It is the plan in the Eighth District to give this problem serious considera-

tion at the next society meetings to see if some plan can be devised which will somewhat relieve the situation.

The doctors of the Eighth District, also, are to be commended for their undivided support given to the State Society in its effort to improve the public relations of the American Medical Association. Considerable time, thought and energy, as well as some money, have been spent for this work and it has been a great help to the Councilor to have such understanding backing. This support has made it possible to carry the Committee's efforts to a successful conclusion, making Minnesota an important factor in the establishment of the Council on Medical Service and Public Relations of the American Medical Association.

This Council is destined to play a very important part in the future of medical practice; but as the program is developed, it will need continued support and consideration.

In conclusion, it can be said that the doctors of the Eighth District continue to maintain high standards of practice and public relations.

W. L. Burnap, M.D.
Councilor, Eighth District

REPORT OF COUNCILOR OF THE NINTH DISTRICT

Of interest and gratification to members of the Ninth District have been the visits on leave of many of our colleagues now on active duty. Their experiences at Midway, Munda, etc., apprise us of real contributions of service and sacrifice. From the members still in domestic service, we learn of many important assignments and signal promotions in rank. Medical annals of this war will record imposing achievements by physicians of this state.

At home, duties and activities continue equally pressing. There has, however, not come to our attention any unreasonable inconvenience or undue suffering as a result of medical shortage, considering circumstances. Medical meetings have continued without interruption with very good attendance.

The St. Louis County Medical Society again sponsored one evening of the sectional and general meeting for the Industrial Safety Committee. The principal address at the latter was especially well received. It was a health lecture exposing many of the fallacies held by the laity pertaining to medical practice.

The Wagner-Murray-Dingell bill was discussed by three members of the Rotary Club at one of their meetings.

The mobile x-ray unit of the St. Louis County Public Health Association has covered an extensive portion of the county in its survey. One preliminary report was given at the meeting of the State Sanitary Conference.

Record of membership shows that all eligible and available men are now on the roster.

Regular meetings are held on the range, the next one being in June. The Range Medical Society has continued its meetings regularly.

Your Councilor urges more interest and better attendance at such meetings as the County Officers' Meeting, etc. One is impressed with the high numerical ratio of talks presented by lay participants and their enthusiasm for their programs; particularly the Barden-LaFollette rehabilitation program.

F. J. Elias, M.D.
Councilor, Ninth District

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Dr. Slater: I would like to say, informally, that the reports of the officers and Council members were most complete and the Committee was impressed by the work that has been done in the State Office and by the Council. It must be realized that these men are all busy in all parts of the state and we should appreciate the wonderful job they have done.

The report of the Secretary and Executive Secretary impresses one with the amount of extra work carried by the State Office as a result of war conditions. The situation of civilian medical service in the state has entailed much work but is apparently being handled in a commendable manner.

The major responsibility for making arrangements for the Conference on Medical Services in Chicago was assumed by the State Office, since the state was honored by having in its membership the president of the conference who was promoted from secretary where he had served so efficiently. The gentleman, in case there is anyone who may not know, is Dr. Burnap who has served the state society well in many ways for many years.

Prewar activities of the State Office have not been neglected. On the contrary, they seem to have been expanded and improved. This is especially true of educational activities for the members and public, such as the Subject-of-the-Month program, the radio and news releases. The committee takes cognizance of the large amount of extra work that has been handled by the office force. They are deserving of a vote of thanks for what they have accomplished.

It was moved, seconded and carried that the report of the Secretary be accepted.

Dr. Slater: The report of the treasurer shows the finances of the society to be in excellent condition. Gross income for 1943 was $43,750.36 compared with $36,905.38 for 1942, an increase of $6,844.98 and there was a net surplus of $7,160.24 in 1943 as compared with $1,817.79 in 1942. The value of the permanent investment fund was placed at $57,091.15 at the end of 1943 with $5,800 transferred to the fund during the year.

Dr. L. A. Buie, chairman of the Finance Committee of the Council:

The financial program of your association during recent years presents a record of admirable progress. Total income from all sources has shown an uninterrupted year by year advance and even last year expenses were not greater than in 1935 and 1937, which also were legislative years. The association has not incurred an operating deficit since 1937. This should be a source of considerable satisfaction to the members of the House of Delegates, to the members of the Minnesota State Medical Association, and particularly to Mr. Rosell, our efficient executive secretary, whose tenure of office coincides with our emergence from that early period of deficits.

In 1937, our invested funds totalled $31,580.98, and our total net worth was placed at $37,900.90. At this time our invested funds amount to almost $60,000, and our total net worth as determined by Shannon and Byers, certified public accountants, as of December 31, 1943, was placed at $82,129.51. Since January 1, 1943, almost $8,000.00 has been transferred to our reserve account in the form of stocks and bonds.

The greatest portion of our income accrues from membership dues and there is no reason to believe that we will sustain any great reduction from that source in 1944. As of December 12, 1943, our membership was 2,216, and we believe that our 1944 budget can be based on a membership of approximately 2,200. Owing to several factors, chief of which is the fact that this year is not a legislative year, our expenditures during 1944 should be less than those of 1943.

At this time, all funds are in good condition and operations for the present fiscal year reveal favorable progress, with excess of income over disbursements. The budget estimates for the year are being well fulfilled. Your Finance Committee will pursue the policy of recommending to the association that funds be invested for transference to the reserve account with reasonable promptness as soon as sums become available. The present ratio of equity investments to the total fund, taking bonds at par, and stocks at cost, is

approximately 14 per cent. In considering further investments, your committee will continue its policy, as authorized by the Council, of increasing the purchase of approved equities until that portion of the Association's portfolio reaches approximately 20 per cent of the total invested funds. Our reserve fund and total net worth stand at very satisfactory levels. The investments now carried in the association reserve account, accordingto expert opinion, possess excellent balance and are in line with the best investment practice of large, endowed institutions the country over.

Dr. F. J. Elias, Duluth: As a member of the Finance Committee, I would like to say a word about the question which may arise in the minds of some of you as to why we should accumulate so much money. The Committee can assure you that this is in line with the policy of other state associations. It is necessary to have a strong financial foundation. And I want to add we are much indebted for exceptionally good advice in watching these funds.

It was moved, seconded and carried that the report be accepted.

Dr. Slater: While all of the Councilors made reports, we are considering them all as one. They all show that the war has increased the responsibility of the physicians remaining at home. It is quite apparent that they are arising to the occasion and are meeting the situation in a creditable manner. Increased work, lack of gasoline and tires have brought a decrease in medical meetings throughout most of the districts but harmony is evident in all of them and the various local societies seem to be in a wholesome condition.

The State Association can be proud of the way physicians are meeting the emergency, in many instances to the detriment of their own physical condition.

It was moved, seconded and carried that the report be accepted.

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Speaker Will then called for the report of the Reference Committee on State Health Relations Reports, Dr. C. B. Drake, chairman. The following reports were considered:

COMMITTEE ON UNIVERSITY RELATIONS

A committee on Domestic Relations would find little demand for its services if all marriages were well adjusted and happy. Such conditions seem to exist in the relations between the University and the Minnesota State Medical Association. Nothing has arisen during the past year that called for special consideration by the Committee on University Relations.

Dean Diehl, of the University School of Medicine, has expressed, by words and actions, a desire for the continuance of the harmonious relations that now exist. Some expansions in the Medical School are contemplated, but are still in a very nebulous stage.

The Medical School and the State Medical Association have a common interest in the advancement of medical education, and in the improvement of medical services to the people of the state. There should not be, and, under the present administration, there is not, any conflict between them.

The function of the Committee, under these circumstances, is that of coöperation and collaboration with the Medical School, and of representing the viewpoint of the practicing medical profession, to the end that the purposes of both organizations may be best attained.

S. H. Baxter, M.D., *Chairman*

STATE HEALTH RELATIONS COMMITTEE

No special problems have been referred during the past year to the Committee on State Health Relations.

The Committee has maintained a continuous informal contact with the State Board of Health, however, and has conferred, as called upon, with the Board, and within its own membership, on many phases of medical participation in public health measures.

T. H. Sweetser, M.D., *Chairman*

COMMITTEE ON PUBLIC POLICY

Since the last annual meeting there has been little activity in this committee. We have lent what little assistance we could to the movement for establishment of the Council on Medical Service and Public Relations of the American Medical Association and to the organization of machinery to work with the Council in this state.

Each member of Congress was asked if he had any preference among doctors to serve on committees appointed for the purpose in each legislative district. The wishes of the Congressmen were followed in each case and two other men were added to those thus designated from each congressional district. Five men were also appointed at large to maintain contact for the Council with the state senators. The following appointments were made:

Committee at Large.—L. L. Sogge, M.D., Windom, *Chairman;* W. L. Burnap, M.D., Fergus Falls; B. S. Adams, M.D., Hibbing; George Earl, M.D., Saint Paul; A. W. Adson, M.D., Rochester.

First Congressional District.—A. W. Adson, M.D., Rochester; H. T. McGuigan, M.D., Red Wing; C. C. Allen, M.D., Austin.

Second Congressional District.—L. L. Sogge, M.D., Windom; A. G. Liedloff, M.D., Mankato; H. H. Holm, M.D., Glencoe.

Third Congressional District.—James Johnson, M.D., Minneapolis; L. H. Hedenstrom, M.D., Cambridge; M. H. Seifert, M.D., Excelsior.

Fourth Congressional District.—Max Alberts, M.D., Saint Paul; F. J. Savage, M.D., Saint Paul; E. K. Endress, M.D., Saint Paul.

Fifth Congressional District.—C. E. Proshek, M.D., Minneapolis; Ivar Sivertsen, M.D., Minneapolis; S. H. Baxter, M.D., Minneapolis.

Sixth Congressional District.—W. W. Will, M.D., Bertha; J. F. DuBois, M.D., Sauk Center; J. N. Libert, M.D., St. Cloud.

Seventh Congressional District.—A. L. Vadheim, M.D., Tyler; L. G. Smith, M.D., Montevideo; B. J. Branton, M.D., Willmar.

Eighth Congressional District.—L. A. Barney, M.D., Duluth; R. J. Moe, M.D., Duluth; Clarence Jacobson, M.D., Chisholm.

Ninth Congressional District.—M. O. Oppegaard, M.D., Crookston; O. J. Hagen, M.D., Moorhead; J. L. Delmore, Sr., M.D., Roseau.

We have one plea to make to the Delegates and that is that they will urge every member of the profession in their communities to take an active interest in elections for Congress and also in the election of members of the House of Representatives of the State Legislature, all of whom must be reëlected this year.

We consider it good policy for medical men to interest themselves in elections for the State Legislature even though they bet on the losing horse. Most candidates appreciate the fact that medical men have considerable influence in their home localities and if the profession shows that it is active and alert, they will strive to secure and retain its favor in their work in the State House, whoever may be elected.

The medical profession stands always for good government and is perfectly justified in trying to secure the best men possible for the Legislature which makes the laws that run the government.

L. L. Sogge, M.D., *Chairman*

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Dr. C. B. Drake: The Reference Committee calls attention to the spirit of co-operation which eixsts between the state medical association and the University Medical School, as confirmed by the report of the Committee on University Relations, and recommends the continuation of the committee.

It was moved, seconded and carried that the report be accepted.

DR. DRAKE: The Reference Committee approves the continuation of the Committee on State Health Relations to provide contact, particularly, between the State Board of Health and the State Medical Association. It was moved, seconded and carried that the report be accepted.

DR. DRAKE: The Reference Committee approves the co-operation in every way possible, of the Committee on Public Policy with the newly-formed Council on Medical Service and Public Relations of the American Medical Association. The new Council, with an office in Washington, will meet a nationwide demand on the part of the profession for a headquarters which will keep in close touch with national legislation affecting medicine. This Council deserves the united support of the state associations and, in the opinion of the Reference Committee, its office in Washington should not be duplicated, as contemplated at present by other organizations representing groups of states. While the Wagner-Murray-Dingell bill is not likely to be passed at this session of Congress, similar legislation will doubtless be proposed from time to time which will require the attention and advice of the medical profession.

The Reference Committee wishes to affirm the emphasis placed by the Committee on Public Policy on the importance of medical men taking an active interest in politics, and in the election of the best representatives to Congress and the State Legislature, as part of their duty as citizens and in the interest of better medical service. Attention is called to the fact that all members of the State House of Representatives come up for reelection this year.

The continuation of the Committee on Public Policy is most essential.

Dr. L. L. Sogge, chairman, discussed the report but his remarks were not recorded.

DR. A. W. ADSON, Rochester: Many of you will recall the meeting of the House of Delegates last year when the creation of a national committee on medical care was proposed. Many of us took part in the deliberation of the House of Delegates of the American Medical Association, later, at which the Council on Medical Service and Public Relations was formed. Four meetings of that Council have been held and I am glad to report that we now have an office in Washington and furniture and a man in charge of affairs. . . . (At Dr. Adson's request, his further remarks were not recorded.)

DR. F. J. SAVAGE, Saint Paul: I presume that most of the men here received the request for support from the new organization in Indiana. They have also heard about the organization originating in California whose objectives are along the same lines as those of the AMA Council. I would very much like to hear more from Dr. Adson on these two other moves which are in competition, apparently, with the AMA.

DR. ADSON: I think much of the credit goes to Dr. Burnap for arranging the discussion at the national Conference on Medical Service this winter at which these two groups had a chance to exploit, if you like, their ideas. Representatives of the Public Health League of California and other western states said, at that time, that they felt the national body was rather tardy in getting action and so they had agreed to assess themselves a dollar per doctor per year to create a fund with which to establish an office in Washington. The purpose was to do the same thing as the AMA office is now organized to do. Representatives of the Association of Physicians and Surgeons of Lake County, Indiana, appeared also. They propose to develop an organization not unlike the AMA. Members of this latter organization are not sponsored by the Indiana State Medical Association. They are a group of serious minded men, however, and they, too, felt that medicine needed better representation and more action. Representatives of both groups discussed their plans before the conference and later before the Council on Medical Service and Public Relations. The California group has already installed its offices in Washington, but Dr. Murray assured us that if the national office, which is part of the Council, serves its purpose they will withdraw and support it. The Indiana group has grown and is still at work. I am not sure how much it will accomplish. Their motives appear honorable, though probably selfish, as reflected in their constitution and in their newspaper broadside. On the other hand, if the national body takes the lead and accomplishes what the physicians generally want, I am inclined to believe, personally, that both groups will gradually fade out and allow the AMA to take the lead.

DR. BURNAP: I would like to say a word about the California movement so there won't be any misunderstanding. Those men from the western states involved, have made a real study of the situation. They are loyal members of the AMA, however, and there is no controversy between them and the AMA. They sent a representative of their own to Washington and found it was very essential that medicine have an office there. They formed their Western Public Health League and decided to open their Washington office for themselves and not for the American Medical Association. The office is for the representatives and senators from their own states, and they have no intention of trying to overlap. It appears that they could get no definite answer as to when the Council was going to act and so they said: "We will go ahead and any time the American Medical Association fills the need, we will withdraw." I want you to know this because I want you to appreciate that they are a fine group of men and loyal members of the AMA.

DR. BAKER: I have on my desk at home about twenty-five or thirty books published and sent to me by the National Physicians' Committee to give out to my patients. I read the book through and what did it have in it? Facts about what Japan had done in the last five years and what Germany and France had done. On the front were the big figures representing three billion dollars. I showed it to a school teacher and she said: "It looks as though you could get a good deal of health service for that."

If a school teacher can't see at first glance what is the purpose of the book, why give it to patients? What we should do is read what industry is doing. The Cadillac Company doesn't say simply, "Here is the Beautiful 1944 Cadillac." They tell us that the 1944 Cadillac has two large motors with a hydromatic drive. That is their method of telling about their product. We should come out in the magazines with a similar story. Not—"Come to me and I will cure your piles without surgery"; but —"In 1799 they bled George Washington to cure him. They drew out his life's blood. Today we give you sulfonamide drugs and vaccines." People should show how medicine has progressed and what we have to offer today. That is what the American Medical Association can do and that is what the group in Washington is behind that desk for. We have been sitting back and running our public relations the other way.

* * *

Speaker Will then called for the report of the Reference Committee on Lay Education. Dr. Monte Piper of Rochester, chairman. The following report was considered:

COMMITTEE ON PUBLIC HEALTH EDUCATION

Wartime shortages and pressures have interfered to some extent with the full operation of our public health education program.

Travel restrictions and the difficulty involved in finding qualified speakers who can spare the time required away from their practices have curtailed our program of talks before lay audiences. The same difficulties forced the postponement of our regular college lecture course until after the war.

Other services have been continued as usual, their purpose being to keep constantly before the public and the profession special wartime health problems.

To that end the Committee has especially emphasized the importance of all routine immunization and vaccination measures and the fact that there has been a significant increase in the number of cases and deaths from diphtheria in the last year is witness of the importance of this effort.

It is the opinion of the Committee that the need for routine immunization of all young children against diphtheria must continue to be a major objective for every county medical society during the coming year. Physicians must also be alert to the possibility of diphtheria in every case of sore throat among adults as well as children. A few deaths occurred in 1943, according to State Board of Health records, in which a week or more elapsed between the time the patient was first seen and the time that diphtheria was diagnosed. Treatment with antitoxin was thus delayed beyond the period when it is most effective. Seven of the 21 deaths in 1943 were among adults and none for whom histories were available had been immunized against the disease. Since 1940 when there were six, the number of deaths has increased each year. The total is small in comparison with 20 years ago but the upward trend and the extreme seriousness of any epidemic in wartime indicate the need for special effort this year.

The Subject-of-the-Month program is now established as an important part of our educational service to our members and indirectly to the public. Since the last report to the delegates, packets on the following subjects have been prepared under direction of qualified experts in their fields:

Food Poisoning	May, 1943
Milk-borne Diseases	October, 1943
Chest Injuries	November, 1943
Rehabilitation	December, 1943
Malaria	January, 1944
Syphilis	February, 1944
Respiratory Obstructions	March, 1944
Cancer	April, 1944

The May packet will deal with various phases of school health examinations as an aid to the expanded school health program in Minnesota.

The Question and Answer service for weekly newspapers of the state has been carried on as usual with the majority of rural newspapers making use of the service and a growing number of questions reaching the office for answer both in print and by personal letter. Short comments on the Subject-of-the-Month and on other matters of current importance accompany these releases.

The radio program with Dr. W. A. O'Brien of the University of Minnesota as speaker has just passed its sixteenth year on the air. It has recently received a special tribute in a publication by Station WCCO which has carried the broadcasts, without interruption, since 1928. The program is cited with pride in this publication as evidence of the station's consistent interest in and contribution to the public welfare. Approximately 200 broadcasts were made over WCCO and WLB, the University Station, under sponsorship of the association during the last year. We are greatly indebted to Dr. O'Brien and radio station WCCO for this unique service.

For the coming year, it is probable that special emphasis should be laid on our Subject-of-the-Month program and its correlation to the other services of the association. It is obvious that our best all-around agency or avenue for disseminating material is via this program. We shall aim to offer another acceptable series for the coming year.

E. L. Tuohy, M.D., *Chairman*

* * *

Dr. Piper: The Reference Committee recommends adoption of the report of the Committee on Public Health Education and wishes to call especial attention to the statement that deaths from diphtheria have increased during the past year.

The Reference Committee feels that the House of Delegates might well add its expression of appreciation for the valuable services contributed to public health education by Dr. W. A. O'Brien and Station WCCO.

The suggestion is offered by the committee that perhaps the Subject-of-the-Month program might include a clarification of the status and limitations of maternal and infant care of the families of servicemen.

It was moved, seconded and carried that the report be accepted.

Speaker Will then called for the report of the Reference Committee on Medical Economic Reports, Dr. R. W. Morse, Minneapolis, chairman. The following reports were considered:

EDITING AND PUBLISHING COMMITTEE

Minnesota Medicine has had the most successful year in its entire history.

The attached financial report shows a net profit of $2,082.98, which is a substantial increase over the previous year.

There were printed a greater number of pages than ever before, and a larger number of the copies of Minnesota Medicine were distributed.

The display advertising carried during the year was greater than in previous years. A portion of this was due to the Twenty-fifth Anniversary Edition of Minnesota Medicine. Aside from that one issue, the prospects for display advertising for 1944 are the most favorable that we have ever enjoyed up to this time.

Because of restrictions on paper stock placed upon us by the federal government, it has become necessary to reduce the size of Minnesota Medicine ⅛ of an inch and to use a somewhat lighter weight paper.

The Editing and Publishing Committee wants to take this opportunity to express its appreciation of the excellent work done for so many years by our Editor, Dr. Carl B. Drake, and by our Business Manager, Mr. J. R. Bruce.

E. M. Hammes, M.D., *Chairman*

MINNESOTA MEDICINE

CASH RECEIPTS AND DISBURSEMENTS

January 1, 1943 through December 31, 1943

Source of Cash Receipts			
Display Advertising		$12,299.32	
Member Subscriptions		5,071.67	
Non-member Subscriptions		485.23	
Illustrations		47.12	
Miscellaneous Income		4.70	
Reprint Income		121.95	
Gross Cash Receipts		$18,029.99	
Less:			
Discounts and Commissions			
Advertising	$1,833.26		
Subscriptions	18.84		
		1,852.10	
Net Cash Receipts			$16,177.89
Cash Disbursements			
Journal Expense			14,131.28
Cash Surplus for Period			$ 2,046.61

* * *

Accounts Receivable January 1, 1943	$	846.38
Accounts Receivable December 31, 1943		882.75

SCHEDULE A

Journal Expense

Printing expense—includes composition, presswork and bindery expense	$ 7,379.16	
Paper Stock	1,439.71	
Illustrations	464.53	
Dr. Carl B. Drake—Editorial Fee	1,200.00	
Second class postage, postage used on Minneapolis and foreign copies and postage due on change of address cards	379.23	
Mailing envelopes (Used on January, 1943, Issue and for mailing out advertisers' copies)	54.70	
Bruce Publishing Company Service Fee (Covers business management, stenographic service, mechanical editing of all material, ordering all cuts, making up dummy, mailing out all proofs, bookkeeping, billing and collecting all accounts, keeping up mailing list, etc.)	1,680.00	
Bruce Publishing Company (Covers telephone, telegrams, addressograph plates, etc.)	132.00	
Stationery	26.95	
Advertising Commission (Includes 5% received from advertising placed through the C.M.A.B.)	1,306.68	
Copyright Fee	24.00	
Bond—J. R. Bruce, Business Manager	5.00	
Traveling Expense to Chicago Meeting	34.62	
Reprints for Advertiser	4.70	
		$14,131.28

SCHEDULE B

Bad Accounts Charged Off

Duluth Ambulance Service	$ 11.00

CASH RECEIPTS AND DISBURSEMENTS

January 1, 1943, through December 31, 1943

Source of Cash Receipts		
Display Advertising	$12,299.32	
Member Subscriptions	5,071.67	
Non-member Subscriptions	485.23	
Illustrations	47.12	
Miscellaneous Income	4.70	
Reprint Income	121.95	
Gross Cash Receipts	$18,029.99	
Less:		
Discounts and Commissions		
Advertising	$1,833.26	
Subscriptions	18.84	
	1,852.10	
Net Cash Receipts		$16,177.89
Cash Disbursements		
Journal Expense		$14,131.28
Cash Surplus for Period		2,246.61

* * *

Accounts Receivable January 1, 1943	$846.38
Accounts Receivable December 31, 1943	882.75

COMMITTEE ON INDUSTRIAL AND CONTRACT PRACTICE

As a result of the rapid growth of industrial practice in the state, a considerable number of physicians are now engaged in contract practice in Minnesota. In view of the fact that industrial medicine is playing an important part in the war production effort and will undoubtedly play an important part in our industrial development after the war, it is encouraging to the committee that no serious infractions have been reported of the code of ethics adopted some years ago at the recommendation of this committee.

Good plant practice is now generally understood to consist mainly of preëmployment examinations with periodic checkups, emergency treatment and supervision of health conditions in the plant. The development and expansion of such practice, when it does not deprive the patient of the services of the physician of his own choice for medical care, should be encouraged as a contribution to the health and welfare of workers as well as to maintenance of high production standards.

F. A. Olson, M.D., *Chairman*

COMMITTEE ON MEDICAL ETHICS

The Committee on Medical Ethics has no formal report for the past year. No instance of a lapse in medical ethics by members of the State Association has been reported to the Committee this year.

Robert D. Mussey, M.D., *Chairman*

MEDICAL ADVISORY COMMITTEE

During the past year nothing of sufficient importance has arisen to make it necessary to call a meeting of the entire committee. Again, many reports of malpractice suits which have been started or threatened have been placed in the hands of the chairman and these have been studied and in many instances, contact has been made with the insurer and advice given. In a few instances, conferences have been held with representatives of the insurer where it was deemed advisable. In each instance, an opinion has been given as to the best method of handling the case in question.

The policy of this committee has been at all times to coöperate fully in an advisory capacity with the insurer in any case where a malpractice suit has been threatened or instituted. During the past year there appears to have been a still further slight reduction in the number of cases referred to this committee. It is highly probable that there are malpractice cases threatened or started which are not referred to this committee through failure of the physicians throughout the state to report the cases to the office of the Secretary of the State Medical Association on the cards provided for that purpose. However, in all instances where the cases have been reported, they have been reviewed, and such cooperation with the insurer as was possible has been given.

—W. H. Hengstler, M.D., *Chairman*

COMMITTEE ON LOW-INCOME AND INDIGENT PROBLEMS

With mounting employment and high war-time prices for farm products, economic aspects of the care of indigents and low-income groups are largely solving themselves at the present time. The most pressing difficulties of the physicians of the state have been involved recently with the shortage of doctors and the need for spreading existing medical services over as much territory for as many people as possible. Medical service for the indigent and for recipients of Social Security Aids is now well organized in Minnesota under direction of the medical unit of the Division of Social Welfare and its State Medical Advisory Committee and should be well prepared against the day when there are fewer jobs and more families in need of care.

Interesting developments have been noted during the past year in two projects. One is in the experiment in prepaid medical service now in operation for Farm Security Administration clients in three counties. The other concerns medical service for migratory workers. The experiment in prepaid service for FSA families may conceivably provide a guide for future prepayment service plans on a large scale in Minnesota.

Plans are now in operation in two counties in the state, Morrison and Ottertail, with arrangements underway to establish the service in Wilkin county, also, in place of Mille Lacs county where the plan was abandoned after a short trial.

The plan in Morrison and Ottertail counties is now two and one-half years old. In each county the same plan submitted by the FSA was revised in accordance with the wishes of local physicians. Medical aspects are administered by a physicians' committee of three physicians elected by the medical men of the county. Medical care is complete except for elective surgery. For the first two years the premium per family was $23.00. Six months ago it was raised to $30.00 on the basis of the first two years' experiences. One dollar out of the premium is set aside for administrative expense. The rest is pooled and the physicians are paid on a prorata basis in accordance with the schedule of Minimum Allowances drawn up by the Division of Social Welfare. Any amount in excess of full payment to physicians on this basis is to be returned to participating families. So far nothing has been returned to the subscribers and physicians have been paid slightly less than they receive

from the Division of Social Welfare for medical service to indigent clients of the welfare boards.

FSA clients are families with acceptable farming experience, character, ability and physical fitness who are unable to obtain satisfactory credit from any other source. They are, therefore, not indigent, although they would fall generally in the marginally indigent class. They are free to join the medical service plan or not, as they wish, and the largest single difficulty with the plan has been the fact that the original number of subscribers did not reach the promised 75 per cent and the number dwindled to a percentage too low for sound financing in the second year.

Percentages of participation among eligible families were:

Morrison County	
1st year	46.7 per cent
2nd year	48.6 per cent
3rd year	40 per cent
Ottertail County	
1st year	58 per cent
2nd year	67 per cent
3rd year	63 per cent

At the end of 1942 physicians of Morrison county reported, on the basis of experience thus far, that a percentage of 66⅔, with a minimum of 100 families, was necessary for sound financing of a county plan and that the premium should be raised for 1944. Collection of $10 in obstetrical cases, beyond the regular premium payment had been provided earlier. Figures for 1944 as to percentages of participation and financial experience are not yet available.

During the first year of the plan, physicians received 65.8 per cent of their current minimum fees. During the second year, 65.7 per cent. No analysis has been made for the third year which includes the first half of 1944. Thus, as noted before, medical fees realized by the physicians are slightly less than those received in Minnesota for medical care of actually indigent persons. The Minimum Medical Allowance schedule used in 80 per cent of the counties for relief is used in this experiment, also, and provides for 66⅔ per cent of current minimum fees.

On the other hand, an analysis made during the third year of operation showed that while 219 FSA families paid $3,300 for medical care, 231 non-participating families of the same income status obtained $400 worth of medical care and of this, only $200 was actually paid to the physicians.

Reports show that abuse of the plan has been minimal both on the part of patients and physicians. On the part of patients, it has consisted of excessive demands in a few instances but lasted only for the first two or three months. On the part of physicians, it consisted in a few instances of over-charging, due largely to misunderstanding, and led to termination of the contract on the part of four physicians. Principle dissatisfaction resulted from the fact that bills had to be submitted for payment by the fifth of each month inasmuch as funds are divided and bills paid on a monthly basis. Bills submitted after that date were disallowed. In nearly all cases dissatisfaction came from men who practiced in neighboring counties and who had failed to attend any meetings at which the plan was discussed.

Following are general conclusions based on two and one-half years' expericnce from the physicians' committee of Morrison County.

1. A high standard of all medical care, except elective surgery, has been provided at a minimum cost and with satisfaction to participating families.
2. Control of all medical features even administratively by the medical profession is absolutely essential to the success of such a plan.
3. An absolute minimum of 100 participating families is necessary to assure reasonable likelihood of success.
4. On the basis of $23.00 annual premium fees received by the physicians were somewhat less than those received for medical care of actually indigent in 80 per cent of the counties.
5. The annual premium should be $30.00 instead of $23.00 for sound financing. This is the premium now charged, with government approval. Experience with the $30.00 premium has not yet been analyzed.
6. All physicians who had an intimate knowledge of the plan believe it possesses many worth-while and desirable features.

The experience of Ottertail County physicians has been comparable and they have also indicated a wish to continue the experiment. A request made by FSA officials for approval from the Council of a plan to extend the service to low-income families who are not clients of the FSA in the three counties was refused at the February Council meeting. Refusal was based on the fact that the number of low-income families among farmers is small and growing smaller because of high wartime prices for agricultural products. At the same time, provisions already exist in the welfare setup for care of hardship cases, under auspices of the county welfare boards and the Division of Social Welfare.

Medical service for migratory workers presents a difficult problem from an administrative point of view because most of the workers for the last two years have been brought in from Jamaica and Mexico under special arrangement with the Departments of Agriculture and Labor. They are not citizens and many of them remain only for the canning and beet sugar seasons. Last year a corporation was set up with headquarters in Indiana and with a board of directors made up of representatives of organized medicine from half a dozen of the midwestern states where these foreign nationals were to be located. Medical services were to be paid for through the so-called "Midwestern Agricultural Workers Health Association" but when the association applied for permission to operate in Minnesota the application was refused by the Secretary of State on legal grounds and the problem still remains to be solved. At this writing approximately 3,500 of these laborers have been requested this year for the canning industry alone, and as many more will undoubtedly be needed for the beet sugar industry. In addition, a considerable number of last year's workers remained in the state over the winter. The United States Public Health Service has undertaken to examine foreign nationals for presence of communicable disease before they enter the United States. The workers are under sponsorship of the War Food Administration, Department of Labor, while they are here.

At a conference on the matter, held on February 21 in Saint Paul between representatives of the War Food Administration, the United States Public Health Service, the State Department of Health, the Division of Social Welfare, the University Farm School and the State Medical Association, a new effort to find a solution got under way and it is hoped that a plan can be organized in conjunction with the Division of Social Welfare which will provide satisfactory care for these workers. This plan was to be ready for representation at the April meeting of the Council.

W. A. Coventry, M.D., *Chairman*

COMMITTEE ON SICKNESS INSURANCE

Prepayment plans for medical service are being installed and operated by a variety of groups in the United States, including state and county medical societies and local groups of physicians and others in urban centers. It is apparent that the medical profession in general is now of the opinion that greater demands will be made in the future than ever before, especially by labor and employment groups, for prepaid medical service.

These facts were clearly in evidence at the Midwinter

Conference on Prepaid Medical Service held in Chicago, February 12, which was attended by several members of the Committee on Sickness Insurance from Minnesota, including the chairman. As a result of their report to the committee at a subsequent meeting, a comprehensive survey of existing plans and of the enabling acts under which they are operating has been undertaken by the committee, with the aid of the State office. The purpose is to arrive at a decision as to the advisability of submitting an enabling act for passage in Minnesota.

It is the opinion of the committee that there is no immediate demand for prepaid service in Minnesota at the present time but that county societies or groups of physicians in urban centers may wish to experiment with it within the next two or three years.

It was decided to secure copies of enabling acts passed in other states where prepayment plans are now in existence and to appeal, through the monthly News Letter to medical men all over the state to study the whole matter conscientiously and to find out also whether citizens in their own communities are interested in the establishment of such plans.

It was also decided to present the question to the House of Delegates at the annual meeting in April. Enabling legislation is necessary before any prepaid service can be offered on a nonprofit basis under medical sponsorship; but the committee will await the decision of the delegates as to whether such legislation shall be submitted at the next session of the Legislature.

A. W. Adson, M.D., *Chairman*

COMMITTEE ON MEDICAL ECONOMICS

One issue of medical economics dominated the year 1943, overshadowing even the medical shortages created by war. This was the introduction by Senators Wagner and Murray and Representative Dingell of a bill calling for inclusion of compulsory government sickness insurance in the Social Security program of the United States. The bill was introduced in June. It is now lying dormant in committee, with hearings merely promised and not held, hung up between tax and soldier vote controversies on the one hand, and postwar plans on the other. It has, nevertheless, been a live, domestic issue and has brought opposition of great magnitude from organized medical, dental, hospital and allied health agencies, and from other professional and business organizations. It has also brought strong factions of organized labor into an active counter-campaign; and some of these, including both the American Federation of Labor and the Committee of Industrial Organization groups, are said to have been chiefly responsible for the bill.

More important, perhaps, it has stimulated the counsels of organized medicine to the creation of better machinery for conducting their public relations and to a firmer and sounder understanding of their own public responsibility. Furthermore, it has forced into sharp focus the present status and future prospects of all voluntary medical and hospital insurance plans.

A brief survey of prepaid medical service plans under medical society auspices shows that, while many state and county societies are actively concerned with various types of plans. Michigan is the one state in which a prepayment plan, initiated and developed from the ground up, by the state medical association, has attained a substantial size. At present it has something more than 600,500 subscribers. Most plans, on the other hand, showed an increase in membership during the past year and it appears that most of them are on a sound financial basis, having overcome the mistakes and difficulties which arose during their formative period. The Michigan plan started with a deficit which had grown to $493,778 in 1942. By December, 1943, the deficit had been reduced to about $150,000. Most of the others seem to be paying their way, though with no comparable number of subscribers. The California Physicians' Service is the only other plan showing a large subscription volume. It has passed through several financial crises and many alterations necessitated by wartime needs; but it is reported to have a beneficiary membership, now, of 87,670 with a unit stabilization fund of $39,299 at the end of September, 1943.

The tendency among most plans it to limit insurance to prepayment arrangements for medical bills while in the hospital or to surgical services, alone, while in the hospital. This tendency is the result of difficulties, both financial and administrative, encountered earlier in complete coverage plans.

In Minnesota, group hospital insurance under the Minnesota Hospital Service Association has made great strides in the last ten years; but the only experiment so far initiated by medical organizations in prepaid service is the Farm Security Administration plan now operating for FSA clients with the approval of the Council and co-operation of the medical societies in Morrison, Ottertail and Wilkin counties. A complete report of two and one-half years' experience with this plan is provided for the delegates in the report of the Committee on Low-Income and Indigent Problems.

The question of whether or not the Minnesota State Medical Association should prepare this year to secure enabling legislation looking to the development of a prepaid medical service plan for Minnesota should be discussed thoroughly by the delegates at this session, in accordance with the suggestion made in the report of the Committee on Sickness Insurance. Whatever the decision of the delegates on this matter, there is no doubt that this is the time to lay a solid foundation for the future of medicine in Minnesota. A policy of laissez faire with respect to future health needs of our communities will leave us defenseless and vulnerable in the midst of the general striving on the part of all elements of the population for social betterment after the war.

This is the time for every county medical society to shape community plans for improvement in facilities and services after the war. It is also the time to stretch every resource, if necessary, and in spite of wartime shortages, to see that no community is without medical service now. Let us be sure that no organized demand arises out of war conditions which will strengthen the case for government intervention in the care of the sick in Minnesota.

The general chairman recognizes their accomplishments and desires that due credit be given to the divisional groupings of this Committee. It is they who have rendered the service and given the time and study to the practical problems presented in these reports. They have done their full share in keeping Minnesota, thus far, in an enviable position from the standpoint of public health and standards of medical practice.

George Earl, M.D., *Chairman*

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Dr. Morse: Your Reference Committee feels that again, during the past year, Minnesota Medicine has been an outstanding journal of which we can be proud. We wish to express our appreciation to the Editing and Publishing Committee, to our editor, Dr. Carl B. Drake, and to their business manager, Mr. J. R. Bruce. We find their financial report in order and recommend approval of the report.

Dr. Hammes, Chairman: Our editor has just completed his 25th year of service as editor of Minnesota Medicine and I think he is entitled to a rising vote of thanks from this House. He submitted his resignation as editor recently, but has been persuaded to remain at his post.

(Dr. Drake was given a rising vote of thanks.)

Dr. Drake: I am quite overcome. I will admit that the last twenty-five years have sped by pretty fast. I

took this step of handing in my resignation simply because I found, in my experience, that a secretary or editor is apt to go on and on until he resigns. After twenty-five years I thought my resignation would be in order. I feel it should really have been handed in some time back. I thank you all for your vote of thanks.

It was moved, seconded and carried that the report be accepted.

DR. MORSE: The Committee on Industrial and Contract Practice reports no serious infractions of the code of ethics. The report concludes with a statement, as follows, which deserves repetition: "The development and expansion of such practice (industrial and contract practice), when it does not deprive the patient of the services of the physician of his own choice for medical care, should be encouraged as a contribution to the health and welfare of workers, as well as to maintenance of high production standards."

It was moved, seconded and carried that the report be accepted.

DR. MORSE: The report of the Committee on Medical Economics ably reviews the developments in this field during the past year. In commending this report of the general chairman, we again express appreciation for the excellent work of the divisional groups of his committee. Your reference committee recommends the adoption of this report.

DR. GEORGE EARL, chairman. The Reference Committee has asked me to stress the problems involved in total care now being given increasingly to various groups under government direction, in particular, the obstetric and pediatric care now being given to soldiers' wives and infants. I believe our consideration should be specific on the question of how far government should go in providing medical services to the people. I believe our action should be specific, also, in respect to the matters reported by Dr. Adson and Dr. Coventry, in the reports of the Committee on Sickness Insurance and on Low-Income and Indigent Problems. I hope they will discuss their problems, too, and that you will give them careful attention.

DR. MORSE: It is my understanding that the committee which is dealing especially with the problem of medical care for soldiers' wives and infants is holding an open meeting in the University club rooms tonight. Anyone who is interested will have a chance to appear before that committee.

It was moved, seconded and carried that the report of the Committee on Medical Economics be accepted.

DR. MORSE: The Committee on Low-Income and Indigent Problems reports in detail the experience, to date, in prepaid medical service now in operation in three counties under the Farm Security Administration. This report is of vital interest to all of us and should be studied by the membership. The last portion deals with the difficult problem of medical service for migratory workers, a problem which we hope can be solved with credit to the medical profession. Dr. Coventry and his committee are to be commended for this excellent report and your Reference Committee recommends its adoption.

It was moved, seconded and carried that the report be accepted.

DR. MORSE: The report of the Committee on Sickness Insurance deals principally with the question of whether or not the next Legislature should be asked to pass an enabling act so that prepaid medical service may be offered on a nonprofit basis under medical sponsorship in Minnesota. The committee wishes to submit this question to the House of Delegates at this meeting. Because the Legislature meets only once in two years and because any emergency might arise when it would be necessary to have such legislation in force, your Reference Committee urges the membership to give favorable attention to this question and recommends adoption of the report.

DR. ADSON, chairman: We often hear it said, "If we are opposed to having the government establish insurance for medical services, why don't we do something about it, ourselves?"

There are now a number of states experimenting with prepayment plans for medical services, but, in order to undertake such programs, it is necessary to have an enabling act which will permit development of the plan on a nonprofit basis without the customary financial requirements of commercial companies.

At the present time, it does not appear to be necessary to start any such plan in our own state; but the question has arisen in our committee as to whether or not we should be prepared with permissive legislation, in case it should be necessary and desirable for groups in individual cities, or even for the state as a whole, to organize a plan when the war is over and employment is reduced.

I don't believe any members of the committee feel that the need is urgent at the present time. But if nothing is done in the next Legislature, it will be impossible to do anything for more than two years; and the state organization may be open to criticism if it has not taken the necessary steps in advance, if some group here wishes to organize, say three years hence. That is the reason why we have urged that this question be discussed by this House of Delegates now.

SPEAKER WILL: It seems to me that there should be a free discussion of this matter by the delegates.

DR. SOGGE: Of course I live in a rural community and I doubt very much if we would be affected; but if a depression comes, as it possibly will, will the people who need protection have enough money to pay the premium: On the other hand, a great number of people are now carrying sickness and accident insurance and it apparently works well. If there are communities and groups in the association who feel it may be necessary they should try to see that there is an Enabling Act passed. They could bring their bill to the Council and let the Council pass on it. Then the Council will give the Committee on Public Policy instructions.

SPEAKER WILL: Dr. Sogge, perhaps some of the Council members themselves may feel they would be "sticking their necks" out under that procedure. It seems to me that this is a problem which this House of Delegates should discuss, as well as the Council. Judging from past history, we are headed for a depression; and this problem is going to be acute again within the next five years after the war ends.

DR. DRAKE: It seems to me that one of the most important things the profession has before it, at the present time, is the need for insurance to cover the cost of catastrophic illness, hospital illnesses for the most part. The occasional call of a general practitioner during the year is not a source of financial embarrassment for the average family; but doctor bills running to several hundred dollars are important. I wonder if the committee has made a survey of commercial policies in use at the present time. I know several are available and some in Minnesota. My barber has one which provides a certain amount of money in case of certain operations. I understand that down in the South, many of the colored people contribute 25 cents a week to a sickness fund which totals a contribution of twelve dollars a year. Personally, I have the feeling that this sort of insur-

ance should be carried by the insurance companies rather than the doctors; it would be a better business proposition. I haven't so very much faith in the ability of doctors to run a business enterprise like an insurance business. But it occurred to me that commercial policies might be pushed through the Medical Association and it might be a very valuable thing.

DR. MORSE: I would like to know from Mr. Brist if my impressions are correct. It is my understanding that an Enabling Act passed by the Legislature does not in any way entail an obligation to carry through any actual insurance scheme. The reason for passing an act at the next Legislature is merely to have it on the statutes so that we will have the necessary legal backing if we find it necessary or desirable to act.

(Mr. Brist was not present to answer the question.)

DR. ADSON: I believe that is the situation. It is a matter of legal protection. In the second place, it is rather a good public gesture because it shows that the profession is taking steps to meet the situation without waiting for the federal government to force insurance down our throats.

DR. F. H. DUBBE, New Ulm: Dr. Adson made the statement that several states have such acts. I believe Michigan is one. I wonder if he would name the others.

DR. ADSON: There are a number of them, I believe, including Michigan, Massachusetts, New Jersey, Pennsylvania, Wisconsin and California.

MR. ROSELL: There are sixteen in all, I think.

DR. ADSON: You would have been surprised at the interest shown by the doctors who attended the conference on prepayment plans for medical service held in Chicago in February. The conference was very well attended. It is true that our Council advises our Committee on Public Policy relative to legislative matters. But an act of this sort is one that affects everybody and I think delegates from all parts of the State should express themselves as an aid to the Council. If you delegates think there is no need for such an act, that will relieve the burden of the sickness insurance committee, as well as the Council and Dr. Sogge. That is the easiest way out, of course. But we wouldn't like to have you come back to us in three years and say, "Why didn't you see that legislation was put on the statute books long ago?"

DR. F. J. HIRSCHBOECK, Duluth: As a member of the Committee on Sickness Insurance, I believe an Enabling Act would be a good thing and show a proper interest on the part of the profession. There is a good deal of work to be done before anything concrete can be offered. There are many overlapping ideas and types of insurance offered now. There would have to be some integration in a whole plan.

They have had a plan in Superior, Wisconsin, I understand, and it was a failure. They couldn't get enough subscribers to make it worth while. Perhaps Dr. Kurten could give us some information about Wisconsin experiences.

DR. KURTEN: It is true that we had three failures in prepayment plans in Wisconsin. We are now working on a rather ambitious plan for some 800 employes in a pressed steel plant. The Milwaukee society petitioned the Council for permission to start it at our last meeting. They began to sell the program about November 15 last year and worked very diligently at it. Members of the society put on overalls and asbestos clothing and went out to where the men were working at their machines to sell the plan, a very hazardous undertaking. But at the last meeting, which was held in March, they reported only 147 contracts sold. Now mind you, the pressed steel people themselves petitioned the Milwaukee society to start the program and yet, when the plan was available, only 147 out of 800 subscribed. That emphasizes one thing, the demand is not anywhere near as great as people would have you think. The Milwaukee group realizes that more money is needed to keep the organization going and so they are meeting with our Council this week end to ask for permission to extend the program to other plants. I hope the permission will be granted them; but I think one thing stands out prominently in our experience, that state society control is important in any program instituted by medical organizations. If plans are run on a county level, they run into difficulty, as we have in Milwaukee. The Milwaukee plan was run on a local basis as an experiment for a year and now it has been turned over to the state society. We recognize that it will not work if it is run on a local level. As Dr. Drake has remarked, it is a question whether doctors should embark on such undertakings at all. Certainly, if they have to use pressure to sell people, it unsells much of the attitude which we have tried to create, the attitude that people should take care of themselves. If they want to buy insurance, it should be available for them, of course; but some of us feel they should buy it from the insurance companies and it is not too important to have medical societies doing it themselves. However, if you do not have an Enabling Act, I believe you should have one, because things may start to move rapidly and you may find yourselves without the implements to do a job. As your chairman has said, there are already medically sponsored plans in many states; if you people in Minnesota do not have the machinery to keep pace you may regret it.

DR. BURNAP: I attended the conference Dr. Adson mentioned and I can't help being impressed with the fact that some form of prepayment for medical care is desirable. I believe we should prepare ourselves for positive action because the great criticism in Washington is that we send men down there and oppose the Wagner Bill and also we oppose everything else. What do we favor? That is the big question. The Council doesn't want to initiate any such action as this. Let the House of Delegates take the original action. I believe the committee has made a wise suggestion because there are difficult times coming but you delegates should take some stand.

DR. SLATER: May I ask whether the Milwaukee policy embraces surgery or total coverage and what the premium is?

DR. KURTEN: It covers surgery only, plus treatment of minor injuries in the doctor's office up to $10.00. The premium is $1.50 a month for single individual, up to $2.70 for a family.

A MEMBER: I wonder if Dr. Adson and the others were impressed with the crusader attitude of the people who were advocating these plans at the Chicago conference. It was my impression that they were trying to put over something that had some attraction from a business standpoint instead of emphasizing the public need and I don't think that is healthy.

DR. D. E. MOREHEAD, Owatonna: At Owatonna we have several factories all of which carry insurance for their employes whether the disability is an injury at work or something else. Practically 100 per cent of the employes have it and it costs something like $12.00 a year. That is nice; but the problem is, who is going to pay for it. In these companies there is a great big policy. But outside of such companies, the problem is, how is the worker to pay for it?

DR. SLATER: What is the limit on surgical fees in the Milwaukee Plan?

Dr. Kurten: The maximum for any operation is $150 but they operate on a regular fee schedule. The money is paid to the doctors direct and the service potentiality of the society is the capital stock of the plan.

I think this matter of insurance in industries, which the gentlemen just mentioned, is important. Economic advisers to industry are advising that industrial management arrange insurance plans and urge their employes to join. You see, some of the approach to this type of thing is coming from other soures than government.

Dr. Morehead: I believe the government is allowing income tax deductions for insurance bought for employes. If the government does not change that provision perhaps more employers will carry insurance for employes. That might be one approach.

Dr. R. R. Cranmer, Minneapolis: I have been interested in this matter for a number of years. Our Hennepin county economics committee studied the problem for a period of five or six years and made considerable progress. We collected as much information as we could and developed a policy. Then we came up against this question of enabling legislation and came to a stop. In the meantime, however, we had sent out a questionnaire to all the members of the Hennepin society, asking their opinion. Practically all of them favored it then, and they favor it now. I think we shall be missing an opportunity if we fail now to get this enabling legislation through.

There being no further discussion, Speaker Will called for a motion.

Dr. Cranmer: I move that we go on record as favoring the passage of an Enabling Act in the next Legislature that will put us in a position to proceed with plans for prepayment medical service.

Dr. S. H. Baxter, Minneapolis: I would like to amend Dr. Cranmer's motion to include a specific mandate to prepare a bill which can be presented to whatever authority of the association is necessary to that we can be prepared with something to present to the Legislature next year.

Dr. Cranmer accepted the amendment and the motion as amended was seconded and carried.

Dr. Morse: Next is the report of the Medical Advisory Committee. Realizing that reports from this committee regarding malpractice cases threatened or started, must necessarily be incomplete, your Reference Committee feels, nevertheless, that a short statistical report of cases and their conclusions would be of interest to the membership. This committee is of great importance to the membership and we wish to express our appreciation for their work. Your Reference Committee recommends the adoption of this report.

It was moved, seconded and carried that the report be accepted.

Dr. Morse: The Committee on Medical Ethics reports no recorded lapse in medical ethics during the past year by members of the state association. Your Reference Committee notes with pleasure this improvement in professional manners and recommends adoption of this report.

It was moved, seconded and carried that the report be accepted. There being no unfinished business, Speaker Will then called for new business to come before the delegates and Dr. Cranmer presented the following resolutions.

RESOLUTIONS

Whereas, in response to widespread demand from the medical profession of the United States, the House of Delegates of the American Medical Association created a Council on Medical Service and Public Relations, and this Council has established an office of information in Washington, D. C., and

Whereas, the movement to create this Council and establish this office originated with and was directed by physicians in this territory, and

Whereas, Dr. Willard L. Burnap, as Secretary and as President of the National Conference on Medical Service and as Chairman of the Council of the Minnesota State Medical Association, gave valuable and aggressive support to this movement not only within this state but among medical leaders from all sections of the country, and

Whereas, Dr. Alfred W. Adson as a member of the House of Delegates of the American Medical Association and as a member of the Council on Medical Service and Public Relations gave resolute and resourceful leadership to this movement and successfully and courageously carried it to completion, and

Whereas, Dr. William F. Braasch, a member of the Board of Trustees of the American Medical Association, through his diplomatic presentations, was instrumental in gaining the necessary support of the Board, essential to the success of this movement,

Now Therefore Be It Resolved, that the House of Delegates of the Minnesota State Medical Association, speaking for the medical profession of this state, recognize the exceptionally meritorious services of Dr. Burnap, Dr. Adson and Dr. Braasch, acknowledges its indebtedness to them for their unselfish and tireless devotion to this project and warmly commends Dr. Burnap, Dr. Adson and Dr. Braasch for their outstanding efforts in behalf of the profession.

Whereas, the medical profession of Minnesota notes with great satisfaction that the Council on Medical Service and Public Relations of the American Medical Association has established an information office in Washington, D. C., and

Whereas, this forward step is in line with the expressed desires of the vast majority of the medical profession, not only in Minnesota but throughout the country, and

Whereas, establishment of this office, in the opinion of the medical profession of Minnesota, holds promise of vastly improved public relations for medicine and for re-establishment of the prestige and good opinion to which the profession is entitled by accomplishment and public service,

Now Therefore Be It Resolved, that the House of Delegates of the Minnesota State Medical Association, in annual session, April 12, at Rochester, warmly commends the action of the Council on Medical Service and Public Relations and reaffirms its confidence in this representative, progressive body,

And Be It Further Resolved, that this House of Delegates commends the Board of Trustees of the American Medical Association for its moral and financial support of the Council which has implemented the Council's action,

And Be It Further Resolved, that this House of Delegates instructs its Secretary to spread this Resolution on the minutes of this meeting and to forward copies to both the Council on Medical Service and Public Relations and the Board of Trustees.

* * *

The Speaker referred the resolutions to a Committee on Resolutions composed of the following members: Dr. F. J. Hirschboeck of Duluth, Dr. A. M. Watson, Royalton, and Dr. R. W. Morse of Minneapolis, chairman.

There being no further new business the meeting adjourned to be reconvened at 8 p.m.

(To be concluded in November issue)

Minnesota Academy of Medicine

Meeting of April 19, 1944

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minneapolis Club on Wednesday evening, April 19, having been postponed one week because of the meeting last week of the Minnesota State Medical Association. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the President, Dr. Walter E. Camp.

There were forty-three members and three guests present.

Minutes of the March meeting were read and approved.

The scientific program followed.

Dr. Martin Nordland, Minneapolis, reported the following case in which the diagnosis seemed to be in doubt. Lantern slides of x-ray films and colored slides were shown.

REPORT OF CASE

MARTIN NORDLAND, M.D.
Minneapolis, Minnesota

This report is about a farmer, twenty-four years of age and married, who came to us on November 1, 1943, thinking that he had a goiter because he had a huge severe swelling on his neck. He related that this swelling had come out rapidly and was present over a period of four months. He had attended a dance about four months ago where he perspired freely and the next day his neck was conspicuously swollen. There was a gradual increase in the size of the mass until about one week before his appearance at the office when the neck became so large that he found it difficult to breathe and he could not turn his head. He was admitted to the Northwestern Hospital. The general physical picture was that of a young, healthy-looking male, 6 feet 1 inch tall, weighing about 190 pounds. He found it difficult to lie down because of the embarrassment to breathing and he had a mild cyanosis of the face and neck. There was a conspicuous pulsation of his jugular veins associated with a diffuse enlargement of the anterior part of the neck. There was a redness to the skin over the swelling and marked tenderness of the entire mass, which had a tense firm feel. His temperature was normal, pulse 112, and his complete blood picture was normal.

X-ray examination of the chest and neck on November 2, 1943, following admission, showed a marked edema of the tissues of the neck with anterior displacement and compression of the trachea. The cardiac shadow showed an enlargement that suggested the possibility of a pericardial effusion. Supplementary films of the chest and abdomen were made on November 6, 1943, which showed an increased penetration, a double density over the heart shadow which suggested a large tumor in this area. There was also a marked enlargement of the liver shadow. There was some widening of the mediastinum. Because of this widening, the shadow seen through the cardiac shadow, and the obstruction of the venous return through the superior vena cava, the roentgenologist felt that the findings were those of a mediastinal tumor, probably of sarcomatous origin. During these few days in the hospital the upper extremities began to swell. The arms became very large, the patient could not move them, and he could not close his hands. Much pain accompanied this change, and the patient was compelled to sit in a chair all the time. He became very cyanotic and had severe choking spells. He was seen by Dr. H. L. Ulrich, Dr. T. Lowry and by Dr. E. T. Bell.

The patient continued to be very uncomfortable for several days. X-ray treatments were being administered, as will be reported by Dr. C. O. Hanson. On November 5, a gland was removed from the right axilla. This was done with considerable difficulty because the patient could not raise his arm. The specimen under the microscope revealed nothing more than an inflammatory lymph node. On November 22, an x-ray film was made. The patient had improved considerably. The roentgenologist reported that some fluid remained in the right pleural cavity and that there was a marked decrease in the size of the mediastinum. He expressed the opinion that the findings were associated with a mediastinal tumor and that there was probably a small amount of fluid in the pericardium.

The patient left the hospital but returned for treatments, and on December 4, the x-ray examination revealed mediastinal shadow to be about normal in size and all the fluid in the pericardium and both lungs had disappeared. On January 4, the patient returned for more treatment, and the x-ray picture of the chest showed a further decrease in the size of the cardiac shadow. The mediastinal shadow was within normal limits as to width, and there was no evidence of parenchymal infiltration. At this time, the patient developed a peculiar conjunctivitis associated with a small tumor. He was referred to Dr. W. E. Camp, who will describe the mass. X-ray treatment of this local disturbance was followed by immediate disappearance of the mass.

Early in March, the patient returned to the hospital with swelling in the region of the right latissimus dorsi muscle. This was treated by x-ray; as Doctor Hanson will report, the swelling disappeared rapidly. Film of the chest on March 27 revealed a practically normal chest.

This patient is presented because of the severity of his early symptoms and because of his excellent response to x-ray therapy. Up to this point, no definite diagnosis has been made, and it might be fitting

to name this tumor a "phantom tumor." He was so severely ill on his entrance to the hospital that Doctor Bell was called for an ante-mortum examination so that comparison might be made for the post-mortum. Doctor Ulrich and Doctor Lowry, as well as Doctor Bell and Doctor Hansen, will discuss this case. At the present time, the patient seems to be in excellent condition with no evidence of the disturbance for which he presented himself.

Discussion

Dr. H. L. Ulrich, Minneapolis: I saw this patient soon after he entered the hospital and our diagnosis at that time was mediastinal tumor pressing on the superior vena cava. He had a very hard thyroid suggesting tumor of the thyroid. It was also thought the hard thyroid and the mediastinal mass might be related. My impression was that the mass in the right chest was part of the mediastinal mass, and that the heart had no fluid in it but was pushed over. The same right-sided mass was pushing down the liver and embarrassing the superior vena cava. I had not seen the end results of the mediastinal clearing until this evening. If this was a tumor mass I don't see how it could have disappeared as it apparently has.

Dr. Thomas Lowry, Minneapolis (by invitation): I saw this patient at Dr. Nordland's request during Dr. Ulrich's absence from the city. As has been clearly brought out, the boy presented classical evidence of superior vena cava obstruction. One or two additional points should be mentioned which indicated to me that the picture could not have been caused by a simple pericardial effusion. First of all, a hard mass extended up from behind the sternum into the base of the neck in the region of the thyroid gland. This produced marked dullness on percussion over the manubrium sterni and was so large and solid that it held the patient's head rigid. If he attempted to flex his neck, this movement caused choking. There was also a severe dry brassy cough. Moreover, I believe one of the x-ray films which have been shown indicates compression of the trachea in the neck. These facts, together with the dramatic response to deep x-ray therapy are, I believe, clearly indicative that this is a case of malignant lymphoblastoma. There was a secondary pleural effusion on the right, and there may have been some pericardial effusion as well, but, if so, it was apparently a result of the neoplastic process.

Dr. Walter E. Camp, Minneapolis: I first saw this boy in the hospital with Dr. Nordland, with this enormous swelling in the neck; and again on January 13 when he came in the office complaining of bulging of the right eye and diplopia. Slide 1 shows the proptosis of the right eye which measured about 2 mm. The next slide shows the infiltrate over and in the external rectus, producing a limitation of adduction with diplopia and 16 degrees of esophoria. A biopsy of this infiltrate showed it to be made up of hyperchromatic lymphoid cells resembling those seen in leukemia. He was seen again March 21, 1944, after irradiation, and the proptosis and diplopia and infiltrate had all disappeared. Esophoria was 3 degrees and vision normal.

Dr. Cyrus Hansen, Minneapolis (by invitation): This very interesting patient was shown to me first by Dr. Nordland on November 2, 1943, and I have nothing to add to the description of the case as already given.

Our conclusions from the x-ray findings at that time were obstruction to the venous return especially through the superior vena cava. The widening of the mediastinum we thought was due to tumor, most probably one of an infiltrating type in the mediastinum rather than a truly nodular one. We felt that a portion of the enlargement of the cardiac shadow was due to a pericardial effusion. We tried to get Dr. Rigler on record at the time by presenting the case at the University Hospital X-ray Conference but he happened to be out of the city at that meeting.

I was asked to see the patient especially with respect to the advisability of x-ray therapy and it was with considerable hesitation that I undertook treatment as I felt he was almost in extremis. In this area a fairly common reaction to radiation is increased edema of the tissues which sometimes even necessitates tracheotomy. I, therefore, very cautiously on November 8, 1943, gave 25 r. over the upper mediastinum and chest which produced no ill effects and on the following day gave 40 r. and was slowly able to increase the dose so that by November 20 he had had approximately 500 roentgens to the mediastinum. At the same time there had been a gradual progressive improvement in the patient's condition and additional treatment was continued until December 4, when he was discharged from the hospital. At that time he was able to be up and around and could lie down flat without distress.

The patient returned to the hospital on January 5, 1944, at which time he had a slight proptosis of the right eye and complained of diplopia, and, when the eye was turned inward, a definite area of infiltration could be seen beneath the sclera about at the insertion of the external rectus muscle. We referred the patient to Dr. Camp and he has discussed his findings. Between January 28 and February 2, 1944, he had four x-ray treatments to this orbit, total dosage being 500 roentgens and there was a prompt recession of the eyeball and clearing of the diplopia.

This man was next seen on March 27, 1944, at which time he stated he was feeling fine but his wife had noticed a swelling along the left lumbar muscle. There was a soft, definite tumor mass present approximately 8 to 10 cm. wide and 12 to 15 cm. long and seemed to be in the subcutaneous tissues. There were also a few small glands in the left posterior axillary region. These were given treatment between March 27 and March 31, 1944, and there was some regression during this time.

Dr. E. T. Bell: Did you treat this mass on the back?

Dr. Hansen: I did treat the mass and, in view of the discussion this case has aroused, I should have advised biopsy. I have seen one or two patients previously who have had widespread involvement by tumor tissue. One in particular was seen at the University Hospital about 1930, who presented himself with a marked pleural effusion, a small amount of abdominal fluid, and a tumor mass in the pelvis which had partially obstructed the rectum. This tumor melted away on small doses of x-ray therapy, recurred from time to time in various parts of the body, but this patient is still alive and I do not believe has had treatment for several years. During the time I saw him, he could not be talked into a biopsy and consequently we do not know the exact nature of that tumor.

In view of the discussion as to the leukemic aspect of this picture, I do not recall that there was any change in the blood picture. I wonder if Dr. Nordland will be kind enough to check this from the patient's hospital chart.

Dr. E. T. Bell: Dr. Nordland called me in to see this patient. The axillary lymph node which I examined showed no malignant process. There was only a moderate hyperplasia of the node. The biopsy which Dr. Camp took from the conjunctiva shows infiltration

of lymphocytes which is consistent with leukemia but might be due to some simple inflammatory reaction. It is not conclusive. There is no evidence from a pathological point of view as to what this patient might have had. His neck showed a massive edema something like Ludwig's angina. There was enormous edema of the upper extremities and also marked pitting edema of the legs and ankles. He obviously had obstruction of the superior and inferior venæ cavæ. He had a wide upper mediastinum. He had a consolidation in the right lower chest which was convex upwards and I thought it was consolidation of the lung. The fact his superior vena cava was compressed some time before the inferior vena cava showed compression, suggests a mediastinal tumor rather than a pericardial effusion. I thought he had a mediastinal tumor but when Dr. Rigler pointed out the distended pericardium my diagnosis was weakened. On the basis of a simple pericardial effusion, we cannot explain the tumor on his neck. We have no positive pathological diagnosis. No diagnosis is established with certainty. If he had a malignant lymphoblastoma the response to irradiation is almost miraculous, yet such responses do occur occasionally.

Dr. Leo Rigler: I can speak about this quite without prejudice and probably without wisdom, as I think I am the only discussant who did not see the patient himself. I was very much impressed with the striking change in the size of the heart. I think the shadow at the right base was due to pleural effusion. This man had obstruction of both the superior and inferior venæ cavæ. It is very hard to explain obstruction of the inferior vein on the basis of mediastinal tumor. As all of you noticed, the heart is quite small in the last film. It seems to me this might be explained still on the basis of some rather extraordinary type of pericardial effusion which produced pleural effusion, and produced obstruction of the superior vena cava. Some tumors do respond to extremely small doses of x-ray, as Dr. Hansen and Dr. Bell have said. It is very difficult for me to explain the diminution in the size of the liver from x-ray treatment over the neck and upper mediastinum. Might not this well be some type of extremely radio-sensitive lymphomatous process which had invaded the pericardium, producing a pericardial effusion as well, with the other abdominal and pleural changes resulting from a tamponade?

(Some one asked if it might be a thymus affair.)

Dr. Rigler: While the enlarged thymus of the infant is very susceptible to x-ray treatment, thymoma is not nearly so susceptible and would not likely respond in this fashion.

Dr. R. G. Allison, Minneapolis: I would like to ask Dr. Camp—does anything but lymphatic leukemia metastasize to the conjunctiva?

Dr. Camp: That is the most common infiltrate that is seen, but any kind of lymphoid tumor can occur in this region.

Dr. Erling E. Hansen, Minneapolis: My thesis before this Academy was on "The Eye Lesions in Leukemia," and I mentioned the case Dr. Allison reported on some years ago. Very recently we had a patient at the dispensary who had exactly the type of muscle change, as much as I could see in Dr. Camp's photograph, as the patient under discussion. We have photographs of the patient who has a lymphogenous leukemia. There were exactly symmetrical lesions in both superior recti muscles. The case I reported most in detail was a youngster with proptosis whose blood was negative at the time of first examination of the patient. I told our fellows to keep after the blood picture, which later showed typical changes. It was a case of chloroma. When we find involvement of the eye muscles with this type of picture we are almost sure to find eventually that there is a leukemia.

Dr. H. W. Grant, St. Paul, gave a lantern slide talk on "Senile Changes in the Eye," and showed slides of various conditions.

The meeting adjourned.

Erling W. Hansen, M.D.
Secretary

POSTWAR PREVIEW

Historians divide history into epochs and eras and with one bold stroke date these eras. But, in reality, there is no clear-cut dividing line. The historians of this struggle will doubtless ring down the curtain on the war period the day peace is signed. From then on they will speak of the postwar era. But in the lives of people, history often doesn't happen like that. Already many families and some communities are in the postwar era. When a man is discharged from the armed forces and comes home to his family, the war is pretty much over for him and his family. They must now face their postwar problems of readjustments. As certain war industries shut down or convert to peacetime work, leaving whole communities in the grip of sudden change, those who are affected by this action are living in the postwar era and must make their adjustments.

As a Nation, we can learn much about the adjustments that these families are making during the war period and we can apply this knowledge on a larger scale when the peace is signed and the men come home by the millions. But that will not help the individuals and families who are now faced with this problem.

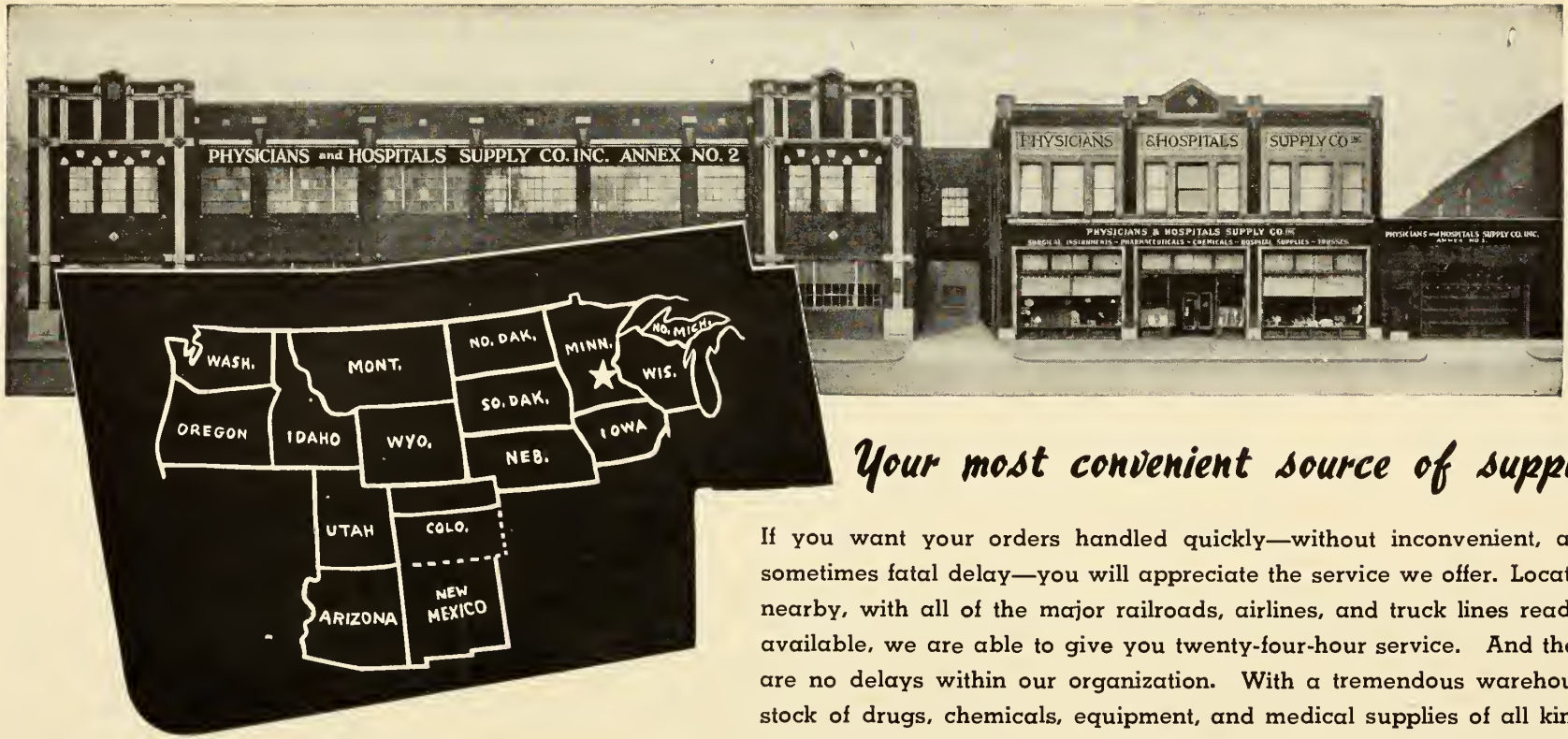
Those of us concerned with the coming of babies into families must be concerned with the postwar adjustment of those families.

Men and women in the armed forces have been seeing the world, participating in great historic events, living under intense excitement. When many of them take off their uniforms they will also take off more authority than they ever hope to exercise again in all their lives. This over-stimulation makes for family problems of the utmost complexity. Eduard C. Lindeman of the New York School of Social Work recently said, "War not only destroys and damages property, it also destroys and damages people." He declared that war marriages were a tremendous risk since the normal period of adjustment becomes in wartime "a period of separation," in which the husband and wife, have completely different types of experience. He warned that unless preventive work were done, crime and delinquency would be worse after the war when the discipline of war suddenly breaks. It is in this realm of family living that the relationship of health to the other aspects of human welfare are brought into the sharpest focus. —Briefs (Maternity Center Association, New York) June, 1944.

WHOOPING COUGH VACCINE GETS OFFICIAL APPROVAL

Vaccinating babies and small children against whooping cough will probably become a more popular procedure now that three kinds of whooping cough vaccines, the Sauer, the Kendrick and Eldering, and the Harrison and Bell, have been officially approved by the American Medical Association.

"Significant protection" in the way of either escaping the disease altogether or having a less severe attack is conferred by modern vaccines, Dr. Harriet M. Felton and Miss Cecelia Y. Willard, of Philadelphia, report (*Journal, American Medical Association,* Sept. 30). Their report reviews many studies made by various scientific groups.—*Science News Letter,* October 7, 1944.



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Of General Interest

Dr. Ben Sommers of Saint Paul has announced the removal of his offices to 1232 Lowry Medical Arts Building, with practice limited to internal medicine.

* * *

Dr. James Hayes, formerly of Minneapolis, has been appointed Assistant Professor of Surgery at the College of Medical Evangelists, Los Angeles, California.

* * *

Sympathy is extended to Dr. F. C. Dolder of Eyota, Minnesota, whose wife died September 18 as the result of a heart ailment.

* * *

Dr. R. D. Hanover of Littlefork has returned to his office following an appendectomy which he underwent in September.

* * *

Dr. Robert Watson of Royalton has been appointed resident physician at Miller Hospital, Saint Paul. He completed his internship and received his M.D. degree at the University of Minnesota in September.

* * *

Dr. James L. Lynch of Winona, who received his M.D. degree from the University of Minnesota in August, has been awarded a three-year fellowship in dermatology at the Mayo Clinic, Rochester.

* * *

Dr. E. M. Hammes of Saint Paul will give the President's Address at the annual meeting of the Central Neuropsychiatric Association, which will meet in Chicago, October 31.

* * *

Lt. John A. Knights, U. S. Navy, formerly practicing at Bemidji, Minnesota, recently visited Bemidji on a fifteen-day leave. He has been in New Guinea for the past twenty-one months and is now at the Great Lakes Station awaiting re-assignment.

* * *

Marine Lieutenant Alvin Nielsen, formerly a practicing physician and surgeon in Northfield, Minnesota, was listed among those wounded in the South Pacific in a news broadcast from the Associated Press in September.

* * *

Dr. Warren Alfred Bennett, member of the staff of the Mayo Clinic in the pathology section, has been



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ordered to active duty in the Army Medical Corps, reporting at Carlisle Barracks, Pennsylvania, October 5. He has received the commission of First Lieutenant.

* * *

Dr. A. V. Fankboner, who has had charge of the Range Hospital at Buhl for the past eight years, accepted the position as head of the medical department of the Walter Butler Shipbuilding Company, with offices at the Riverside yard, effective September 15.

* * *

Drs. W. A. Fansler and James K. Anderson took part in the August 22 session of the regular continuation course at the Station Hospital, Fort Snelling, Minnesota. Their respective subjects were "Diagnosis and Treatment of Certain Rectal Diseases" and "Treatment of Hemorrhoids." The program on September 5 consisted of case presentations and discussions by members of the staff and a paper on "Treatment of Ureteral Calculus" and a discussion of other urological problems by Dr. Frederic E. B. Foley.

* * *

Captain Harlan Alfred Alexander of Minneapolis has been awarded the Bronze Star Medal "for heroic achievement" in military operations against the Japanese on Attu Island in May, 1943. His citation follows:

"Captain Harlan A. Alexander, Medical Corps, United States Army. For heroic achievement in connection with military operations against the enemy on 16 May, 1943, during the Attu Operation. After a furious battle, an infantry company was forced to withdraw under withering enemy fire, leaving five casualties which had not yet been evacuated. After the withdrawal, Captain Alexander, with complete disregard for his own safety, three times led a small group of aid men up a mountain and successfully evacuated five wounded men, although the entire route was over enemy terrain. His courageous action was an inspiration to the men of the battalion and resulted in saving the lives of three of the five wounded soldiers. His courage, coolness under fire, and disregard for his personal safety reflect great credit upon himself and the military service."

* * *

Dr. Byron B. Cochrane interned at the Miller Hospital, Saint Paul, and practiced in Saint Paul for a few years before entering the service in February, 1942, as First Lieutenant. Dr. Cochrane, since receiving the following citation, has become a Lieutenant Colonel:

Major Byron B. Cochrane, 0369227, Medical Corps, United States Army. For meritorious service in connection with military operations against the enemy from 30 January to 8 February, 1944. During the training stages for the Kwajalein Operation, Major Cochrane devised new and ingenious methods for the treatment and evacuation of casualties. His untiring effort and devotion to duty resulted in a superior organization prepared to handle all casualties in the most efficient manner. During constantly changing situations and numerous attacks he displayed great zeal and initiative which inspired his officers and men to greater effort in the treatment of the wounded. In order that he might properly supervise and carry out his duties, Major Cochrane made numerous trips to the front lines with complete disregard for his own safety. His resourcefulness made possible the immediate treatment and evacuation of the wounded, thus saving the lives of many who would otherwise have died.

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR OCTOBER

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the University of Minnesota School of the Air.

October 4	11:00 a.m.	WLB—Medical Science and Health
October 7	9:30 a.m.	WCCO—Blood and Plasma Transfusions
	11:30 a.m.	WLB-KROC—Medicine in the News
October 11	11:00 a.m.	WLB—Health Habits
October 14	9:30 a.m.	WCCO—Water and Salt
	11:30 a.m.	WLB-KROC—Medicine in the News
October 18	11:00 a.m.	WLB—Body Posture and Health
October 21	9:30 a.m.	WCCO—Preparation for Operation
	11:30 a.m.	WLB-KROC—Medicine in the News
October 23	4:15 p.m.	WCCO—Your Hospital in Wartime
October 25	11:00 a.m.	WLB—Care of the Feet
October 28	9:30 a.m.	WCCO—Facial Reconstruction
	11:30 a.m.	WLB-KROC—Medicine in the News

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The society met at the Minnesota Club in Saint Paul for its regular dinner meeting, September 12, 1944.

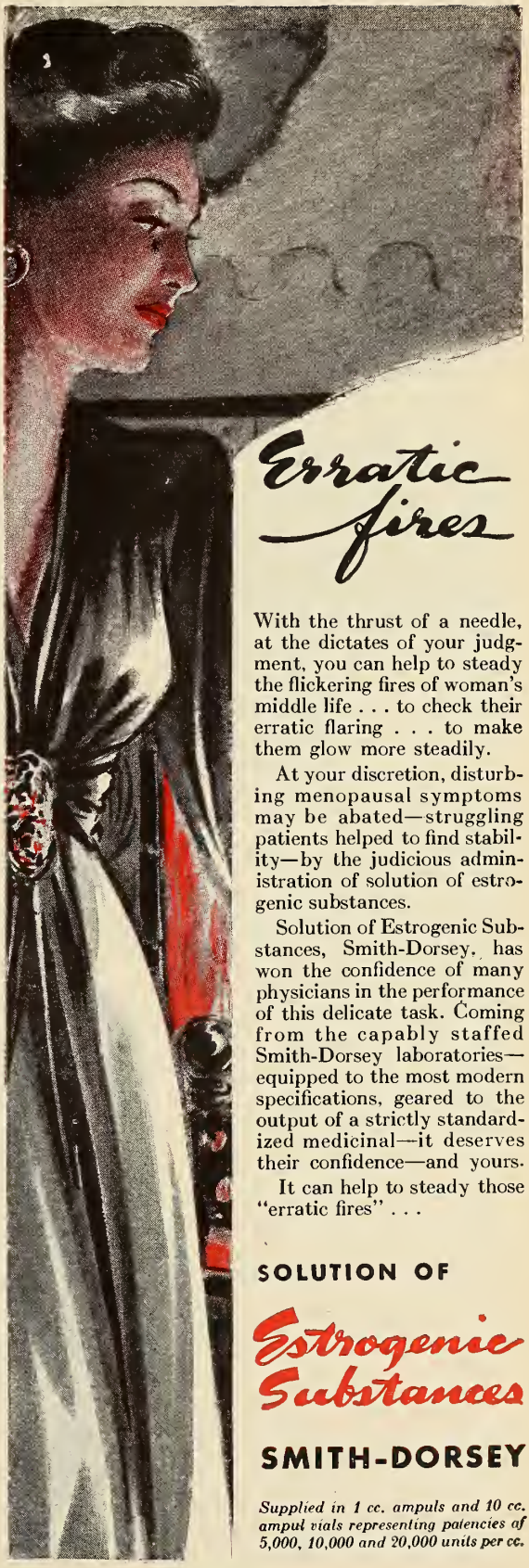
The following program was presented:

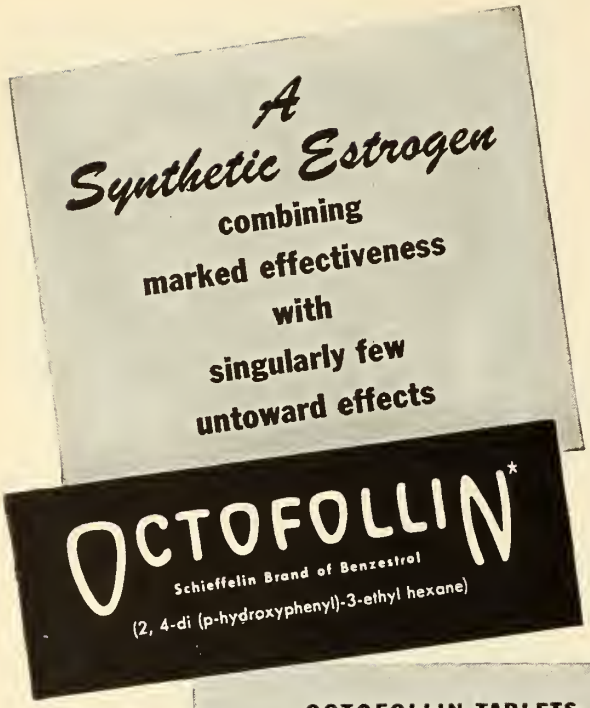
1. Direct Psychiatric Treatment of the Child—Dr. H. S. Lippman.
2. Personality Traits of a Group of Inebriates as Revealed with the use of the Minnesota Multiphasic Personality Inventory (inaugural thesis)—Dr. Stanley B. Lindley.

—Royal C. Gray, M.D., *Secretary.*

POSTGRADUATE ASSEMBLY OF INSTITUTE OF MEDICINE OF CHICAGO

The Institute of Medicine of Chicago will present a Postgraduate Assembly on Nervous and Mental Diseases and War, on Wednesday and Thursday, November 1 and 2, 1944, in the Palmer House, Chicago. The sessions will be devoted to studies of the phases of neurology, psychiatry, and neurosurgery that are of particular importance at this time to clinicians, specialists, and lay workers in the fields mentioned. Interested physicians and workers in Chicago and the Midwest





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are invited to attend. There will be a registration fee of $5.00 for nonmembers of the Institute of Medicine, except for those in uniform.

The Assembly will present a carefully integrated program which will include five addresses on each of the two mornings and on one afternoon; panel discussions on the afternoon of the second day; a "Neuropsychiatric Information Please" program on the first evening; and the 17th Pasteur Lecture of the Institute of Medicine of Chicago on the second evening by Dr. Edward A. Strecker, President of the American Psychiatric Association.

NERVOUS AND MENTAL DISEASES AND WAR

The Institute of Medicine of Chicago will stage a two-day Postgraduate Assembly on Nervous and Mental Diseases and War on November 1 and 2, 1944, at the Palmer House in Chicago.

Addresses on various phases of psychiatry, war neuroses and neurosurgery will occupy morning, afternoon, and evening of November 1 and the morning of November 2, with the afternoon of November 2 being devoted to panel discussions. An informal dinner followed by an address on War Psychiatry by Edward A. Strecker, Professor of Psychiatry at the University of Pennsylvania, will conclude the program in the evening.

Physicians may obtain copies of the scientific program which contains the names of many outstanding specialists both within the armed forces and without by writing to the Institute of Medicine of Chicago, 86 East Randolph Street, Chicago 1, Illinois. Registration fee for nonmembers is $5.00.

WASHINGTON COUNTY

The Washington County Medical Society held its regular monthly meeting on September 12. The meeting was well attended. A number of propositions of local interest were considered, and preparations made for Mantoux testing.

The scientific program consisted of the presentation of a film on "Modern Nutrition." The demonstrations are done by members of the National Research Council, the U. S. Public Health Service and a wartime health setup.

PREVENTIVE MEDICINE

Our health agencies have already hoisted their flags over large fields, some of which (possibly most of which) they occupy so thinly as to be ineffective. To make good our plans for the prevention of disease and the postponement of death, we must keep the preventive aspect clearly in mind. Until we have gotten much farther along toward the complete control of tuberculosis, syphillis, gonorrhea, and other preventable diseases, we cannot, as health authorities, seek or take on the tremendous task of securing good medical care for everybody. That may come unsought, in some degree, in time, probably piece-meal, but we are certainly not ready for it now. To spread out over still wider areas, would mean being even less effective than we are now in many of our preventive efforts.—HOMER FOLKS, Am. J. Pub. Health, Feb., 1944.

In Memoriam

LEO J. CONLIN

Dr. Leo J. Conlin of North Saint Paul died suddenly June 10, 1944, at the age of forty-four.

Doctor Conlin was born in Saint Paul, January 21, 1901. He attended Mechanic Arts High School and Saint Thomas College in Saint Paul. He obtained his M.D. at the University of Minnesota Medical School in 1931, and interned at Columbus Hospital in Seattle. He practiced at Seattle from 1933 to 1935, and at Tacoma from 1936 to 1937, when he moved to Lake Elmo, Minnesota. In 1941, he moved to North Saint Paul and was a member of the Ramsey County Medical Society at the time of his death. He was local Health Officer at North Saint Paul and had an appointment as Deputy Coronor of Ramsey County.

Doctor Conlin is survived by his mother, Mrs. H. P. Conlin; three brothers, Howard, Paul, and Harold, and a sister, Mrs. J. M. McAllister, all of Saint Paul.

MAX HAROLD HOFFMAN

Dr. Max H. Hoffman of Saint Paul, prominent in the field of internal medicine and endocrinology, died suddenly on the evening of August 21, 1944, at Mahtomedi, Minnesota.

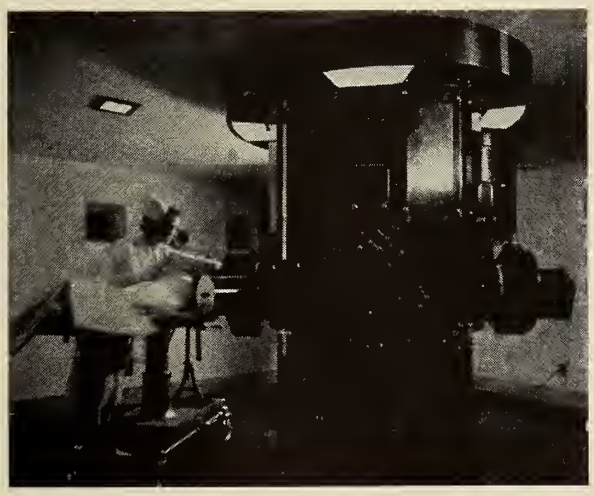
Doctor Hoffman was born March 4, 1896, in Saint Paul, the son of Jacob Hoffman. He graduated from Mechanic Arts High School and received the degrees of B.S., M.B., and M.D. in 1920 from the University of Minnesota Medical School. After serving an internship at the University Hospital, he won a fellowship at the Peter Bent Brigham Hospital in Boston, where he took postgraduate work in 1921. In 1932, he studied in Vienna.

As an undergraduate, Doctor Hoffman was a member of Sigma Xi. He was also a member of the Minnesota Academy of Medicine, the Minnesota Society of Internal Medicine, of which he was at one time secretary, and in 1940 president, the Central Society for Clinical Research, the Minnesota Pathological Society, the Ramsey County Medical Society, and the Minnesota State and American Medical Associations.

Doctor Hoffman was associated with the late Dr. Arnold Schwyzer of Saint Paul from 1926 to 1936, when he opened an office at 1232 Lowry Medical Arts Building. He was particularly interested in endocrinology and for several years conducted a laboratory in Saint Paul under a Federal grant for research and investigation in this field. He had expressed the regret that the demands of private practice prevented him from devoting more time to research.

Doctor Hoffman was recognized for his ability and sterling character by his many friends in the profession as well as without. He never married. He is survived by his mother, a sister, Mrs. Mort Bentson, and a brother, Edward Hoffman, all of Saint Paul.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

DIAGNOSIS AND TREATMENT OF ACUTE MEDICAL DISORDERS. Francis D. Murphy, M.D., F.A.C.P. Professor and Head of the Department of Medicine, Marquette University School of Medicine, and Clinical Director of the Milwaukee County General Hospital and Emergency Unit, Milwaukee, Wisconsin. 503 pages. Illus. Price, $6.00, cloth. Philadelphia: F. A. Davis Co., 1944.

ANNUAL REPRINT of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1943. Cloth. Price, postpaid, $1.00. Pp. 150. Chicago: American Medical Association, 1944.

The present volume of reprints contains only eight reports on rejected articles; it is interesting to note that objections to these are on a much higher plane than those it was necessary to urge against the flagrantly quackish preparations of earlier days.

Perhaps the most noteworthy of the nineteen general and "status" reports in this volume is the one declaring the Council's intention of using henceforth only the metric or centimeter-gram-second system in its publications. The report itself gives some interesting and readable history on the subject of weights and measures. Of most timely interest to the general physician as well as the endocrine specialist is the report on nomenclature of endocrine preparations. The report gives a currently quite complete list of the available commercial preparations, including those not accepted by the Council as well as those which stand accepted. Another report in the field of endocrinology is that recognizing the use of estrogens in the treatment of prostatic carcinoma.

Attention should be called to at least two of the reports concerned with vitamin preparations, namely, the status report giving the Council's decision that the evidence does not yet warrant the acceptance of cod liver oil preparations for external use, and the report announcing the Council's recognition of the use of massive doses of vitamin D in arthritis, and in this volume includes a current comment from The Journal titled "Hope (false) for the Victims of Arthritis," which re-emphasizes this objection.

The status report on xanthine compounds gives a much-needed delimitation of the therapeutic claims that may be recognized for aminophylline and its related xanthine derivatives. Of similar interest is the report on the local use of sulfonamides in dermatology, and in the same category may be mentioned the report on agents for the treatment of Trichomonas Vaginitis, which points out that the present aim should not be for new medicaments in this field but for further information, especially concerning failures with those that have been used. In another status report the Council sets forth its conclusion that present evidence does not

justify claims for advantage of oral use of sodium sulfonamides over the free drug.

In line with its decision to consider for acceptance various contraceptive preparations, the Council published a status report on conception control, which is concluded in this volume. The report comprises a series of concise statements on the various preparations and methods of control, prepared by Dr. Robert Latou Dickinson, together with a statement of criteria by which the Council will consider the acceptability of contraceptive jellies, creams, and syringe applicators and nozzles, diaphragms and caps.

NEW AND NONOFFICIAL REMEDIES, 1944, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1944. Cloth. Price, postpaid, $1.50. Pp. 778. Chicago: American Medical Association, 1944.

The current volume of New and Nonofficial Remedies reflects two important and forward looking decisions of the Council, namely, to use the metric system exclusively in all its publications, and to consider for acceptance contraceptive preparations offered for use as prescribed by physicians. These decisions in turn reflect the vigorous and progressive leadership of the Council in the service of Medicine.

The chapter on contraceptives is quite comprehensive; with the acceptance of more preparations, it will undoubtedly assume a large place in New and Nonofficial Remedies. The Council has thus far accepted some contraceptive jellies and creams, contraceptive diaphragms, diaphragm inserts, syringe applicators, and fitting rings. It is understood that a number of additional preparations have been submitted for Council consideration since the book went to press. This chapter represents a courageous and long-needed innovation.

Some of the new preparations that appear in this volume are: Succinylsulfathiazole, a new sulfonamide, a proprietary brand being "Sulfasuxidine"; Diodrast Concentrated Solution, a preparation of the already accepted Diodrast, for use in a special diagnostic procedure for visualization of the circulatory system and also cholangiography; a preparation of Sodium Benzoate for use as a liver function test; Mersalyl and Theophylline, accepted under the name Salyrgan-Theophylline Tablets, proposed as an adjunct to intravenous injection of the already accepted drug; Zinc Insulin Crystals and Zinc Insulin Injection Crystalline; Tetanus Toxoid; and Concentrated Oleovitamin A and D, a dosage of the pharmacopœial preparation.

A glance at the preface shows that certain general articles have been revised to bring them up to date. More or less important revisions have been made of the following chapters: Barbituric Acid Derivatives, Estrogenic Substances; Parathyroid; Ovaries; Sulfonamide Compounds; Vitamins, especially the sections, Vitamin B Complex and Vitamin D. In this connection it is worth noting that each chapter in the book is reviewed annually, or more often if indicated, by the responsible referee for such revision.



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(Continued from Page 835)

future ministrations may lead you, whether among the Dutch, the Belgians, the Poles, the Greeks, the Filipinos, the Chinese, the Arabs, or among your own people in this great land of ours, may you serve as true ambassadors of healing, good will, and understanding. May you learn, and by your deeds proclaim, an undeviating gospel of internationalism. May you relearn, and reiterate, the abiding truth that all men are, and can become, brothers! Learn, and pass on the lesson, that nothing is properly foreign. All races, all creeds, all colors, all peoples, constitute one land, one people who can, and must, learn to live amicably on this shrunken globe of ours. He who dines in Paris nourishes a brother philosopher in Cairo. The wail of a Chinese baby dying of starvation in Shanghai will shake to its depths the foundations of the Empire State Building!

You are girding your minds and your bodies, to combat suffering, disease, starvation, despair, which will be spread across the surface of this earth like a festering blight. You will be called on to minister to men and women and children throughout the world, who have been maimed and wounded by every lethal agent known to mankind. Torn by bullets, poisoned by gas, shattered by bombs, blighted by hunger, seared by despair, ravaged by pestilence! And, mind you, you are also girding your arms for the battle for the peace, for the abiding peace which must follow this present holocaust, if mankind is to be spared extinction. In your hands of healing, in the depth of your understanding, in the width of your compassion, in the height of your self-abnegation, lies the hope of the world!

It is only by losing ourselves in issues not personal to ourselves—in other men's troubles and sorrows and in other men's joys—that we will ever find ourselves. It is only as our actions become farther and farther removed from motives of self-interest that we learn to spell the words kindness, loyalty, devotion, consecration, not with our lips, but with our hearts. The services of the physician to the patient, the services of the teacher to the student (and remember, our primary interest in you is not whether you go through college. Rather, it is how much college goes through you), the services of the man of research to science, can never be expressed in terms of money. The hope of medicine lies in its remaining an outspokenly, unashamedly, idealistic profession.

And let this be the star toward which you set your course through the shoals, the shallows, the storms, and the calms of the medical school—full knowledge, sound judgment, highest skill, single-minded devotion! And all poured forth daily throughout your lives at the service of other's needs.

"And make the Council of thy heart to stand; for there is none more faithful unto thee than it. For a man's soul is sometimes wont to bring him tidings; more than seven watchmen that sit on a watchtower."
—Wade W. Oliver, M.D., Professor of Bacteriology, Long Island College of Medicine in *Journal of Association of American Medical Colleges,* September, 1943.



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GYNECOLOGY—One-Week Course in Vaginal Approach to Pelvic Surgery starting October 23.

OBSTETRICS—Two-Week Intensive Course starting October 16.

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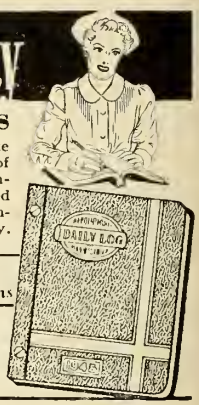
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THE ROENTGENOLOGICAL DIAGNOSIS OF SKELETAL DISEASES OF INFANTS AND CHILDREN

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THE Russell D. Carman Lecture of the Radiological Society of Minnesota commemorates the life and work of a great pioneer in roentgenology who came to the Mayo Clinic in 1913 when roentgen diagnosis was still in its infancy. The medical world now appreciates the great strides in the roentgen diagnosis of gastro-intestinal disease, so much of which can be attributed to his keen interest, his untiring investigations and his numerous contributions to roentgen literature. His impress on medical education is reflected in the men whom he trained and who in turn have and are adding to the ever-broadening scope of roentgenological diagnosis. His memory is perpetuated and kept fresh by these annual Russell D. Carman lectures. I regard the invitation to deliver this, the eleventh lecture, as a great honor.

Dr. Carman's contributions and accomplishments have been enumerated in previous lectures and it, therefore, seems fitting to trace the progress made in another branch of roentgenological diagnosis. Since the discovery of the roentgen rays, much has been added to our knowledge of diseases affecting the skeleton in infants and children and roentgenological examination has become a most important aid in clinical diagnosis. Its value to the pediatrician and the practitioner is unquestioned. Advances have been made, both in those conditions in which the skeleton is primarily affected and in those in which it is secondarily involved; in diseases of common occurrence and in those which are infrequently encountered. In the earlier periods of the development of pediatric roentgenology, roentgen findings were largely confined to descriptions of fully developed stages of the various diseases. Soon an appreciation of the value of roentgen diagnosis developed as shown by the efforts to discover the early stages and the late end results, the former being of especial use in the diagnosis of doubtful cases. An effort will be made to discuss some of the more noteworthy contributions to the roentgenological knowledge of skeletal diseases in infants and children. Osteomyelitis, tuberculosis, bone tumors and other surgical conditions will not be included as time will not suffice to include diseases of primary interest to the surgeon only.

In most diseases of infants and children, the pathological changes in the growing long bones occur with the greatest regularity where the two normal processes of ossification take place. These areas are (1) where elongation of the diaphysis, endochondral ossification, occurs and (2) where growth in thickness, endosteal or periosteal ossification occurs. At times different disease processes produce similar changes in the periosteal areas and the diagnosis is dependent on the recognition of the changes going on in the endochondral areas. Likewise in the latter, similar roentgen pictures are produced by different diseases which makes differential diagnosis impossible by the roentgen examination alone. Frequently a combination of the roentgen signs makes possible

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the diagnosis, as in the case of infantile scurvy where the picture of scorbutic atrophy is a composite one, based on the roentgen signs considered collectively. As our knowledge of the roentgen diagnosis of skeletal disease in children increased, and more conditions producing bone changes were described, signs which were at one time considered pathognomonic were demonstrated in other disease processes. As a result, the word pathognomonic must be used with the greatest care and circumspection.

Vitamin Deficiency Diseases

In the two chief conditions caused by a deficiency of vitamins, rickets and infantile scurvy, the lesions have been described in minute detail. With the increased interest and education of the laity in vitamin deficiency and with the increase in Child Welfare and Health Clinics, the incidence of these diseases has tended toward reduction. This has caused a change in the roentgen picture, especially in infantile scurvy. While receiving in general more vitamin, some children may, nevertheless, develop a deficiency through irregularity of feeding which may not be continuous. Whereas in earlier years cases progressed to an advanced stage with a succession of roentgenographic changes occurring with regularity, many now show a different picture due to fluctuating remissions and relapses that produce synchronous active and healing lesions in the bones. Schmorl as early as 1909 drew attention to the relapsing type of rickets, due to its seasonal incidence.

Rickets

Rickets has been usually divided into the fetal, infantile and late types with the type known as renal rickets included in the last. For a long time the question of the actual occurrence of fetal rickets remained unanswered. Ylppö, one of the earlier workers, who attempted to prove the existence of fetal rickets by roentgenological studies, concluded that in five cases out of fifty-eight premature infants studied, rachitic lesions had developed during intra-uterine life, and, therefore, rickets could be considered of fetal rather than necessarily of postnatal origin. Farrell and Burt[6], in their studies, concluded that recognizable cupping and flaring of the diaphyseal ends of the long bones is sometimes normally present in the long bones of new-born infants and that it could not be considered evidence of fetal rickets. In 1930, Maxwell and Turnbull[13] reported two cases of fetal rickets in children born from mothers who had been suffering from prolonged and untreated osteomalacia. In one of these cases, evidence of fetal rickets was only afforded by the roentgen examination, and in the other, the badly preserved condition of the bones, detracted to some extent from the value of the evidence presented. But in 1932, Maxwell was able to confirm this evidence by an indisputable case which he carefully studied from the clinical side and Turnbull from the pathological side. This last case established beyond doubt the occurrence of rickets or of osteomalacia in the fetus. The fetuses from osteomalacic mothers may show a disturbance of calcification which may be osteomalacic but which cannot be differentiated histologically from that in rickets in young children. The roentgenograms which accompany the papers of these authors show not only cupping of the diaphyseal ends but a distinct fraying-out of the zone of temporary calcification. This change was absent in the cases studied by Farrell and Burt.

Up to the time of the publication of the papers of Eliot[14] and later Davidson and Merritt,[5] the early changes of the rachitic process in the long bones were not recognized with any degree of certainty. They described the early changes and the diagnosis can now be made at a much earlier age than was formerly believed possible. Eliot believes that the following signs are of diagnostic importance in the early diagnosis: (1) cupping, (2) spreading, (3) spur formation, (4) fringing or fraying, (5) stippling. These changes all occur in the endochondral areas. Cupping is an early sign in some bones and not in others. It is a normal finding in infants but becomes exaggerated as rickets develops. It is closely related to spreading, i.e., the appearance in the roentgenogram of the widened diaphyseal ends. Eliot states that cupping is also found in moderate degree in infantile scurvy and in slight degree in the ulna in the very young, often premature, infants, where all the bones are in a state of rapid growth. It is found, also, in osteochondrodystrophy. Spurs may either be straight in line with the cortex at the ends of the diaphyses in which case they project like thorns from the sides or they may bend outward or be irregularly curved. Fraying is the gradual loss of definite outline of the end of the diaphysis. Stippling is of rare occurrence. Periosteal and cortical changes may be shown in the upper end

of the ulna on the side toward the radius due to early deposition of osteoid bone, but the bones must be in complete supination on the film to demonstrate this change.

In the more fully developed cases of rickets, some of the changes found are osteoporosis producing a streaked appearance of the diaphyses, thinning of the cortex with pathological fractures of the shafts, accentuated trabecular markings in the metaphyseal areas, moth-eaten decalcified epiphyseal centers, sometimes barely visible, and in films of excellent soft part detail, swelling of the resting cartilage can be demonstrated.

Late Rickets

Schmorl and Pommer[21,22] by their researches made it clear that rickets and osteomalacia are essentially one and the same pathological condition, the main distinction being the age of the individual. Thus late rickets occupies a position between rickets and osteomalacia, the first occurring in infants and younger children and the second in adults. Late rickets consists of an intermediate group of cases, the lower boundary of which Hess states was set at four years by Schmorl with whose opinion he agrees. At the other extreme, it is more difficult to draw the line of differentiation between rickets and osteomalacia. Under such classification would then be placed the cases which have been reported as juvenile osteomalacia. An essential but extremely difficult point in diagnosis is the exclusion from late rickets of all cases of recrudescence and cases which have in the literature been termed rachitis inveterata.

The roentgenographic appearance is much like that of infantile rickets in many of the reported cases. Generalized osteoporosis, frayed-out appearance of the diaphyseal ends and the epiphyseal centers, coarse trabecular shadows in the metaphyses and bowing are often found. A most important sign is the increased width of the space between the diaphyseal end and the epiphyseal center due to the deposition of osteoid bone at the end of the diaphysis.

Renal Rickets

The condition known as renal rickets has usually been considered a relatively rare one, but recurring reports in the literature indicate that probably it is a more common disease than is generally believed. Price and Davie[17] have divided the roentgenographic changes into two types. The first differs in no essential way from ordinary rickets. The shafts of the long bones retain a reasonably normal density but more or less florid rachitic changes are seen at the diaphyseal extremities. The second type is unlike the roentgen picture usually found in ordinary rickets. The bones show a generalized osteoporosis. There is a loss of sharp demarcation between the cortex and the medulla. The cupping of the metaphysis is broader and deeper than is usually seen and in the metaphysis there is often a ground-glass, wooly, or moth-eaten appearance with varying degrees of stippling. Sometimes there is an area of subperiosteal erosion extending for a short distance along the diaphysis and the vault of the skull may be considerably thickened. The changes found in this group are similar to those seen in multiple osteitis fibrosa cystica. Collapse of the softened metaphysis with a resultant rotation of the epiphysis and secondary epiphyseal displacements occur, causing gross deformities. Price and Davie[17] believe the changes of this second type are probably to be correlated with parathyroid overactivity, as parathyroid enlargement has been found in many advanced cases of the disease. They regard the resemblance of the skeletal changes to hyperparathyroidism as too striking to be ignored.

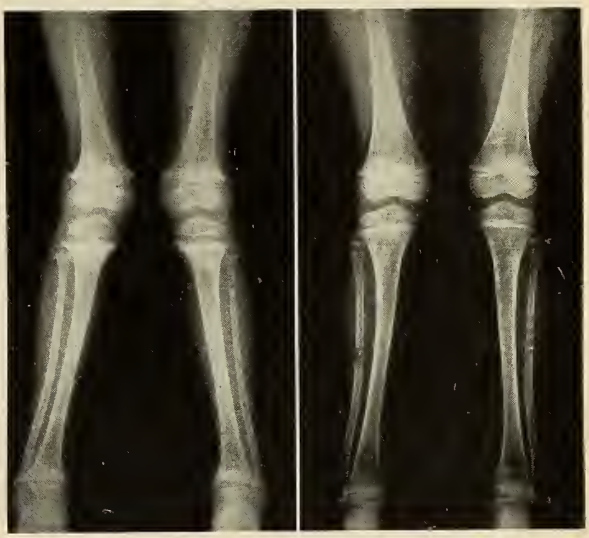


Fig. 1. Late rickets. Note the flaring of the diaphyseal extremities, the increased width of the space between the ends of the diaphyses and the epiphyseal centers of ossification, the fraying out of the zones of temporary calcification and the knock-knee deformity. After treatment, note the dense zones of temporary calcification, the increased density of the shafts and the disappearance of the wide space between the epiphyseal centers and the ends of the diaphyses.

No résumé of the contributions to the roentgenological diagnosis of rickets is complete with-

out mention of the work of Park and his co-workers on the correlation of the pathological and roentgenological changes of the rachitic process.



Fig. 2. (*left*) Early scurvy, showing the slight rarefaction and indentation at the distal borders of the diaphyses of the femurs and tibias illustrating the "corner sign." A slight tendency to a ground-glass rarefaction and faint rings about the epiphyseal centers of ossification are also shown.

Fig. 3. (*right*) Lead poisoning. Dense and wide zones of temporary calcification at the ends of the diaphyses illustrating the typical change in lead poisoning.

Infantile Scurvy

Soon after the introduction of the roentgen ray as a diagnostic agent, descriptions of the roentgenographic findings in the long bones in infantile scurvy began to appear. These were largely confined to emphasis on the white line, that is the increased density of the zone of temporary calcification, and to descriptions of the Trümmerfeld zone, the rarefied band or zone of increased density behind the dense zone of temporary calcification. Subperiosteal hemorrhages were also reported by the early observers, and at first some were wrongly diagnosed as bone sarcomas. The contributions of Wimberger[26] (1921) in describing the early changes, and in addition the healing stage, marked a distinct step in the roentgen recognition of the disease. He regarded as early signs the increased density of the zone of temporary calcification, the thinning of the cortex, the atrophy of the distal ends of the diaphyses resembling ground glass, and a dense ring about the epiphyseal centers of ossification. This ring is analogous to the increased density of the zone of temporary calcification at the ends of the diaphyses. In 1932, Kato[8] published an excellent critical review of the roentgen signs of infantile scurvy and emphasized the fact that none of the ten roentgenological signs which had been described, except the subperiosteal hemorrhages, are pathognomonic of scurvy. It cannot be too strongly emphasized that the roentgen appearance of scorbutic atrophy is a composite one and that the diagnosis is based on the signs considered collectively. Other causes of bone atrophy must be eliminated by differential diagnostic methods such as the history and clinical laboratory examinations.

In 1935, Park[15] and his associates published in the Sir Thomas Barlow Birthday Number of the *Archives of Diseases in Children,* a most voluminous and exhaustive study of the early bone changes in infantile scurvy. The early roentgen signs were detected in the lower ends of the diaphyses of the radius, ulna and tibia and in the upper end of the humerus. In the knee joint, the distal end of the femur only showed the lesions when the scorbutic process was well advanced. The upper end of the diaphysis of the tibia also showed changes but it was not as valuable a site for their demonstration as the distal ends of the ulna and radius. In the roentgenogram the changes were the slightest fuzziness of the cortex at the distal outer border of the diaphysis with the slightest rarefaction of the neighboring cancellous tissue. The cortex was so thin in some cases as to be altogether lacking. When the lesion was further developed, the defect became more definite. It then assumed the form of a cleft or crevice just behind the distal border of the diaphysis. In some cases this crevice was so slight that it almost escaped notice. In others it extended a short distance into the substance of the bone or half way across, or it had the appearance in some instances of having been torn away from the shaft of the bone itself. Sometimes instead of a cleft, the outer border of the distal lower end of the diaphysis showed a triangular area of rarefaction. In others, this corner appeared rounded and was thrust beyond the outer end of the distal extremity and was greatly rarefied. Park called this sign "bagging." Others in referring to it have termed it the "corner sign."

In their conclusions it is stated that there are no early signs of scurvy. The slight roentgen changes described enable the diagnosis to be made by roentgen examination of the skeleton somewhat earlier than previously. Braestrup and Chrom[2], in 1940, studied twenty-five cases which

showed low values for ascorbic acid in the plasma, or had insufficiency of the vitamin in their histories, or had sufficient change in their ascorbic acid tolerance. In none of them did they find the sign described by Park. They agree with him that there is a complete absence of parallelism between the duration of symptoms and the degree of bone changes.

Lead Poisoning

Vogt[25], Park[16] and Caffey[3] separately contributed descriptions of the changes in the long bones in children in lead poisoning. The zone of temporary calcification at the diaphyseal end of the long bones is widened and becomes very dense, forming a broad, dense band at the extremity of the shaft. This is caused by a deposition of lead in the bones in this area. Vogt and Aub[24] in analysing the bones chemically found that lead was actually deposited in inverse ratio to calcium. The zones of greatest density in the roentgenogram contained less calcium but four times as much lead as the cortex elsewhere. Phosphorus as reported by Phemister and bismuth as reported by Caffey act in similar fashion. If cessation of ingestion of lead occurs followed by a second period of ingestion, double lines of increased density may be observed at the diaphyseal extremities. In two of Caffey's patients who recovered, the poisoning was found to have left sequelæ in the bones, appearing as transverse lines in the diaphyses and linear rings of density in the ossification centers of epiphyseal cartilages and the carpal bones, similar to those previously regarded as pathognomonic of healed scurvy. Caffey reproduced these roentgenological findings as well as the anatomic changes in young dogs by feeding them lead.

Leukemia

Excellent descriptions of the roentgenographic appearance of the long bones in leukemia in children have appeared during the last two decades. Baty and Vogt[1] drew attention to the fact that while the diagnosis of leukemia is relatively simple when the usual clinical picture is present, the manifestations of the disease are frequently atypical and there may be considerable diagnostic difficulty. Aleukemic leukemia presents the greatest problem. Roentgen examination of the skeleton, in addition to the other clinical and laboratory findings, may be helpful in arriving at the correct diagnosis. According to them, the most constant finding is a narrow transverse zone of diminished density just proximal to the zone of temporary calcification in the ends of the diaphyses of the long bones. This zone varies in bones in which

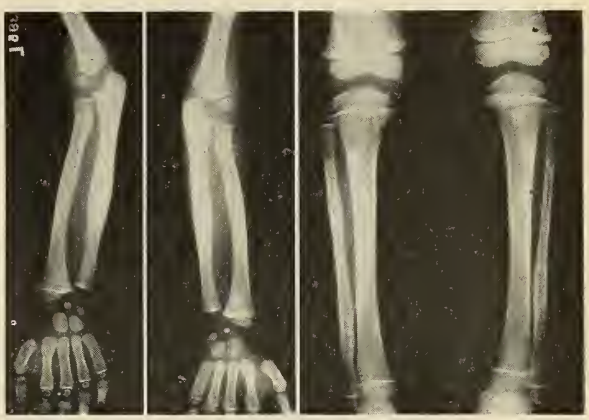


Fig. 4. Aplastic leukemia. Fusiform swelling of the shafts with marked metaphyseal rarefaction in the long bones.

the growth is most rapid, such as in the lower ends of the tibias and femurs. It seems to become relatively more prominent as the disease progresses. They found this rarefied area in the bones of 70 per cent of the patients examined. It was present in 80 per cent of the cases of myeloid leukemia and in 65 per cent of the cases of lymphoid leukemia.

This zone of rarefaction is similar in location and appearance to the rarefied zone found in infantile scurvy with which it must not be confused. Baty and Vogt also found the same type of rarefaction in cases of severe septicemia in children. They explain its cause as a disturbance of bone growth, probably induced by local interference of the infiltrating leukemic cells. It is also probable that both this interference and the general metabolic dysfunction accompanying leukemia play a part in production of the roentgenographic changes.

In many of the cases of aleukemic leukemia and aplastic leukemia reported, extreme generalized osteoporosis and irregular cortical absorption in the long bones have been found. Accompanying these changes there may be compression of the vertebral bodies and fractures of the long bones. Periosteal infiltration has also been demonstrated in the roentgenogram. This is prone to occur in the aplastic type. In some cases the osteoporosis is confined to the metaphyseal areas and the appearance may simulate neuroblastoma with gen-

eralized miliary metastases. Diffuse granular mottling of the skull occurs in both conditions and there may be separation of the cranial sutures due to increased intracranial pressure. C. H. Smith[23] reported a case of leukopenic myeloid leukemia associated with arthritis. The severe polyarthritis resembled rheumatic fever and the roentgenograms revealed periosteal thickening, cortical erosion and medullary rarefaction. At autopsy there was marked leukemic infiltration in the bones.



Fig. 5. Typical changes of congenital erythroblastic anemia in the skull. Perpendicular striations with bulging of the outer table of the skull. Marked thinning of the cortex, wide medullary spaces and prominent trabecular markings in the diaphyses with "squaring" of the ends of the femurs and tibias.

In osteosclerosis the bone changes are primary. The osteosclerotic changes gradually crowd out the bone marrow resulting in some patients in secondary blood changes. There may be a severe anemia with an aplastic type of blood picture resembling that seen in aleukemic leukemia. On the other hand as pointed out by Baty, primary changes in aleukemic leukemia with osteoporosis are in the bone marrow. There is leukemic infiltration of the marrow with erosion of the bone by rapidly growing, infiltrating masses of leukemic cells.

Chronic Hemolytic Anemias

The important roentgen changes in congenital erythroblastic anemia were described by Reynolds in 1927. In 1937, Caffey[4] presented a study of twenty-one cases and drew attention to the early lesions. He found the earliest involvement of the skull was a thickening of the lower frontal squamosa. Radial striations developed first in the anterior portion of the parietal bones near the sagittal suture. They later appeared on both sides of the lamboidal sutures in the posterior parietal bones and the anterior portion of the occipital bones. The mid-parietal bone was last affected. Caffey found that in patients of approximately the same age and presenting similar clinical findings, clinically and hematologically marked differences were found in the roentgen changes in the skull although the manifestations in the long bones did not differ greatly. He believed that the skull alone could not be regarded as a reliable criterion for the presence of the disease, nor could it be regarded as an index of the degree of involvement of the remainder of the skeleton.

Fundamentally, the changes in the osseous system are the result of a hyperplastic condition of the marrow which causes decalcification of the trabeculæ and thinning of the cortical bone. In the long bones widening of the medullary canals and cortical atrophy are early shown. This results in an abnormal fulness and rectangular outline of the shafts. As the patients grow older, more marked and heavier trabeculations develop in the shafts of the long bones. The trabeculations become accentuated as the age of the patient increases.

In the later years of life of the patients the bone density increases in degree with a disap-

pearance of the coarse reticulation which previously was present. The cortical bone remains atrophied but the rectangular outline of the long bones, however, persists. The late skeletal lesions are osteosclerotic as compared with the osteoporosis in the earlier ones. Overgrowth of the trabecular bone leads to obliteration of the reticular pattern and finally to osteosclerosis.

Sickle Cell Anemia

Lesions in the skull and long bones similar to those found in congenital erythroblastic anemia have been reported in sickle cell anemia, but at the Children's Hospital no cases have been observed in which the roentgen examination has demonstrated variations as marked and extreme as in the former. They have resembled what might be termed an early roentgenographic stage of erythroblastic anemia. Caffey called attention to coincident rickets, the combination of the two diseases being of likely occurrence due to their prevalence in the colored race.

Coeliac Disease

The significant roentgenographic changes in coeliac disease are generalized osteoporosis, marked thinning of the cortex with softening, bowing and fractures of the long bones, and kyphosis. Of particular interest are the transverse osteoid zones described by Looser which simulate pathological fractures. They usually occur in cases in which the disease is well advanced and they have a tendency to be symmetrically distributed. Transverse striations in the ends of the diaphyses of the long bones are often found.

Xanthomatosis

In 1928 Rowland[19] proved that xanthomatosis was a disease of lipoid metabolic disturbance. The term is applied to a syndrome combining defects in the membranous bones, exophthalmos and diabetes insipidus. This syndrome had been described previously by Hand in 1893, by Schüller in 1915, and Christian in 1919. Rowland defines the condition as a rare, probably familial, constitutional disorder of metabolism, in which a deposition of lipoid mixtures, particularly cholestrol and its ester, takes place, leading to a characteristic hyperplastic reaction in the reticulo-endothelial, or the histiocytic, apparatus. The disease usually occurs early in life but there are also rare adolescent and adult types. In the early childhood form the course of the disease as described by Rowland, is usually a history of good health up to the time of onset, which very often dates from an acute infection. This is followed by exophthal-



Fig. 6. Marked atrophy, thinning of the cortex, dense zones of temporary calcification, transverse striations and a pathological fracture in a case of long-standing coeliac disease.

mos, excessive thirst, irritability, yellowish coloration of the skin and retardation of growth. There may be, also, vague pains throughout the body, sore mouth and loose teeth.

The pathological process producing the symptoms of the disease appears first as masses of foam cells or histiocytes, loaded with fat in the tissues surrounding the small blood vessels. This is followed by granuloma-like connective tissue accumulations and finally by marked fibrosis and foreign body giant cell reaction. The massive

growth of foam cells in the marrow spaces produces atrophy and degeneration of the bone trabeculæ and the cortex. At autopsy the bones are soft and cheeselike consistency. The polyuria



Fig. 7. Advanced xanthomatosis. Large areas of rarefaction and absorption in the skull.

and polydypsia are believed to be due to the result of pressure on, or direct invasion of, the hypophysis and tuber cinereum by the lipoid masses. The exophthalmos is probably due to lipoid infiltration of the retrobulbar space, although Sosman believes it is dependent upon destruction of the roof of the orbit by the lipoid infiltration.

Spontaneous remissions may occur and if so are associated with an increase in the bone density of affected areas. The membraneous flat bones are especially involved and also the ribs, clavicles and vertebral bodies. Bone thickening is rare in the acute form of the disease but occurs sometimes in the adult form. The typical erosions in the skull have distinct and clear-cut but iregular margins. Usually the inner table of the skull is early eroded, perforation of the outer table occurring at a later stage. Sometimes, however, the outer table may be first affected. In these cases, soft tumorlike masses may be felt very early over the eroded areas.

Gaucher's Disease

Gaucher's disease is defined as a metabolic condition due to disturbed lipoid metabolism in which lipoid kerasin accumulates in the reticulo-endothelial cells. Splenomegaly, hepatomegaly and lymphadenopathy usually appear early in the course of the disease on account of the lipoid infiltration of these organs. At times, the osseous system also is involved, and the bone and joint symptoms may overshadow the visceral manifestations.

Junghagen[7] describes the following changes in Gaucher's disease: (1) well-marked general osteoporosis; (2) porous and trabeculated spongiosa; (3) destruction of the spongiosa with formation of large or small worm-eaten defects; (4) thinning of the cortex and widening of the bones, especially marked in the lower ends of the femurs; (5) compression of the diseased bones by the weight of the body.

Reiss and Kato[18] state that by roentgenologic examination of the long bones and the spine in Gaucher's disease, a large amount of information can be obtained which offers aid in the antemortem diagnosis of the condition. In addition to the signs above mentioned, they drew attention to the thinning of the cortex of the lower ends of the femurs with the flaring increase in width resembling an Erlenmeyer flask. They found it so often in recorded cases that, properly correlated with other physical findings, it is a diagnostic sign of the disease. In our experience it is found in other blood dyscrasias.

Roentgenographic changes also appear very often in the head and neck of the femur. These are extensive areas of rarefaction and marked osteoporosis intermingled with areas of condensation. Pathologic fracture of the neck may occur. The appearance of the hip as seen in the roentgenogram may simulate the changes seen in chronic osteomyelitis, or sometimes the scattered areas of rarefaction and condensation in the metaphysis of the neck with widening and thickening may resemble Perthe's disease, or again, there may be a resemblance to tuberculous arthritis. In advanced cases the vertebral bodies may assume a wedge or diamond shape with occasional compression fractures.

Congenital Syphilis

During the last two decades, many excellent contributions have been made to the knowledge of the roentgen diagnosis of congenital syphilis, notably those of McLean[9,10,11,12], Park and others. Of the many manifestations of syphilis in infants and children, probably osteochondritis is the most interesting. This condition was described fully by

Wegner from the pathologic standpoint and his descriptions of the three stages of the disease occurring at the diaphyso-epiphyseal junction of the long bones can be traced and recognized in the roentgenogram. Osteochondritis is seen either at birth or shortly thereafter. It may be present even if a negative Wassermann reaction occurs in the infant. In the first stage the zone of temporary calcification at the very extremity of the diaphysis is increased in width and density. It must be remembered that this is not pathognomonic of congenital syphilis but occurs also in other diseases. The resting cartilage of the epiphysis becomes swollen and in roentgenograms of good soft part detail this feature can be recognized. Very slight roughening of the epiphyseal side of the zone of temporary calcification occurs, this being due to the beginning of the so-called saw-tooth margin. Ossification of the calcified spongiosa is decreased except around the fully developed blood vessels, and the result is a beginning rarefaction described by McLean as the metaphyseal rarefaction which later becomes very prominent.

As the disease progresses, the roughened border becomes more easily discernible in the roentgenogram and the metaphyseal rarefaction likewise becomes more pronounced. The zone of temporary calcification becomes wider and denser than in the first stage. The resting cartilage of the epiphysis swells to a greater degree. In some cases, a second band of increased density is seen on the diaphyseal side of the zone of temporary calcification within the area of metaphyseal rarefaction, producing an appearance simulating a second zone of temporary calcification.

In the advanced stage all these changes become much more marked and in severe cases almost complete disintegration of the zone of temporary calcification may occur. Epiphyseal separations develop, although these should properly be called diaphyseal infractions as the line of cleavage occurs on the diaphyseal side of the zone of temporary calcification. Where these occur the pseudoparalysis of Parrot is usually noted on clinical examination.

In severe and fulminating infection, the entire diaphysis becomes involved resembling very much the changes seen in pyogenic osteomyelitis. Baetjer and Waters called attention to the diagnostic importance of punched-out areas of rarefaction situated near the zone of temporary calcification. These are found especially in the milder cases.

In almost all cases, periostitis of varying degree accompanies osteochondritis. McLean has described the types of periosteal reaction as follows:

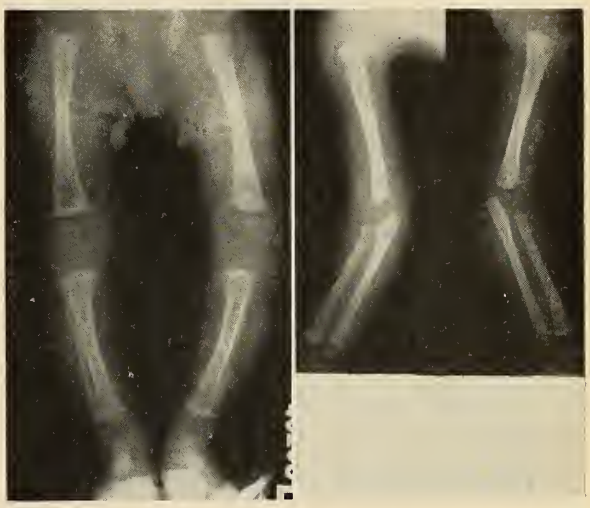


Fig. 8. Congenital syphilis. Slight periosteal reaction, barely visible, along the shafts of the femurs and tibias. Double zones of temporary calcification. Beginning metaphyseal rarefaction.

1. Periosteal thickening which occurs in an intact shaft independent of the lesions in the metaphysis, generally thickest in the middle of the shaft.

2. A supportive or healing type which is found over any break in the cortex of the shaft.

3. Ossifying periostitis or the hypertrophic osteoporosis of Péhu which is the least common of all the types and is characterized by a tremendous thickening of the entire shaft of the bones, due to a series of enveloping coatlike layers of newly formed bone which are separated from the shaft and from each other by a thin layer of spongy substance.

It is impossible to make a diagnosis of syphilitic periostitis without the presence of changes of osteochondritis or a positive Wassermann reaction, as periosteal reactions occur in rickets and other conditions.

Conclusion

Within the time allotted for this lecture it is impossible to cover all the diseases of infants and children occurring in the practice of pediatrics in which the skeleton is affected. Those discussed will serve to emphasize the importance of the

roentgen examination of the skeleton and will serve, too, to demonstrate the progress and advances made in the roentgen diagnosis of these conditions during the last two decades.

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LOCAL ANESTHESIA IN GENERAL PRACTICE

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THE number of operations which a physician can do under local anesthesia depends largely on his personal qualifications. Many persons have the mistaken idea that the method requires no special study or knowledge of its technique of application and that every doctor is prepared to use it successfully. On the other hand the efficient use of local anesthesia depends primarily upon the training and knowledge of the operator, his experience in its use, his willingness to master its details and in no small measure upon his disposition.

Indications

1. Often in general practice especially in rural communities one is confronted with the necessity of performing operations, both minor and major, without adequate assistants or a trained anesthetist. Local anesthesia lends itself admirably if the operator himself can produce a satisfactory analgesia.

2. In office practice and in industrial accidents, local anesthesia is almost indispensable.

3. The treatment of fractures of the extremities is readily accomplished with profound muscular relaxation by means of local anesthesia.

4. In tendon suture, traction on the distal divided end determines definitely its function and the proximal end can be identified by the voluntary effort of the patient.

5. Böhler and others have called attention to the merit of local anesthesia by the injection for painful sprains, painful nerves and lame backs.

6. Local anesthesia is often found to be of great value in the substandard risks of heart disease, the aged, toxemias, et cetera.

7. Crile used local anesthesia in conjunction with nitrous oxide; Farr with narcotics; and we have used it many times to reinforce an incomplete or waning spinal anesthesia. In prolonged operations it is often impossible to tell when the effect of spinal anesthesia is lost.

The successful application of local anesthesia demands a knowledge of its technique of applica-

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tion, its rules of safety and of anatomy. Proficiency increases with practice and confidence. Sufficient quantities of a suitable solution must be placed in contact with sensory nerves for an adequate length of time to interrupt afferent impulses. Local anesthesia also demands a higher degree of surgical technique expressed by adequate exposure and freedom from trauma which unquestionably contributes to freedom from shock and from many untoward postoperative complications.

The drugs in most common use are nupercain, cocain, beta eucain, alypin, novocain, quinine and urea, and alcohol. They vary greatly in degree of toxicity and efficiency. Nupercain and cocain are the most toxic and like quinine and urea and alcohol should be used for specific purposes. Novocain, because of its efficiency and low degree of toxicity, is the drug in almost universal use. The employment of a weak solution permits the use of many times its toxic dose with safety because of a delayed rate of absorption. Adrenalin added to the solution further delays absorption and prolongs the duration of anesthesia. Its use, however, is contraindicated in a member with a terminal circulation such as the finger or penis because of the danger of an ischemic gangrene. Adrenalin should be used cautiously or not at all in the presence of hyperthyroidism or hypertension.

Methods of Application

1. Topical
2. Infiltration
3. Regional
   - (a) Intraneural
   - (b) Paraneural
   - (c) Intravenous } Too dangerous for common use
   - (d) Intra arterial } Too dangerous for common use
   - (e) Field block
   - (f) Combined infiltration with circumferential infiltration block.

Intraneural and paraneural injections or nerve block require a profound knowledge of anatomy of the nervous system and an extensive experience. On the other hand, infiltration with infiltration (field block) block give the greatest percentage of success.

The strength of novocain solutions most applicable to general use are 0.5 to 1 per cent to which 1 to 3 minims (most often 2 minims) of adrenalin solution 1/1000 has been added. To readily prepare a 1 per cent solution for emergency use the writer carries in his medical bag papers containing 1.0 gram of novocain crystals. These crystals have the advantage of not spilling and do not freeze in winter. The crystals are added to 100 c.c. of tap water and boiled. Sterile adrenalin solution is conveniently obtained in small ampoules for hypodermic use. Syringes must be of good quality with well-fitting fine needles 0.5 inch to 4 inches in length.

Preliminary narcotics should be given with the idea of minimizing anxiety rather than for the relief of pain.

It is essential that only the first skin wheal should be felt, that subsequent wheals should be made from beneath the skin and that the solution be flowing from the needle as it advances. Safety demands that the point of the needle must always be in motion when the novocain solution is running into the tissues lest an intravenous dose, which is the most toxic, be given. In the case of nerve blocking where the needle point remains stationary the syringe must be detached or the needle aspirated.

In abdominal surgery, infiltration and field block permit a painless incision with negative intra-abdominal pressure equal in most instances to that produced by spinal anesthesia but immediately the abdomen is entered one must be prepared to deal with the innervation supplied by the splanchnic nerves. Anterior splanchnic nerve block when properly applied will permit surgical attack of practically any organ, providing, of course, that the pathological process permits its application.

(Technique was demonstrated by lantern slides.)

DANGERS OF HOSPITALIZATION IN MATERNITY CARE

The rapid increase of hospitalization for maternity care has brought with it a bitter corollary. Many of the small hospitals in rural areas and country towns are not fit for human habitation, to put it in plain English. The statement issued by the American Hospital Association a number of years ago that *"a poorly managed, poorly equipped hospital is the most dangerous place in which to have a baby"* still holds true. Many of the small hospitals in big cities as well as in rural areas are in this class. A number of the experts point out that the existing standards for hospital care, widely publicized throughout the country, are not really good enough. It is found that in many communities the hospitals which meet these standards are not providing the brand of obstetric care safe for mother and baby.

Local health departments should draw up high standards for maternity hospitals within their jurisdictions, see that they are enforced and the people taught to go only to the hospitals that meet the health department standards. *Briefs,* Maternity Center Assn., June, 1944.

INTRAVENOUS ANESTHESIA

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THE intravenous administration of drugs in conduct of anesthesia has led to great advances toward perfection. No drug yet found helpful in anesthesiology, and suitable for intravenous use, has closely approached this perfection. Perhaps a more perfect drug will yet emerge, or perhaps combined use of some we now know will nearly reach this goal. In the meantime let us make full use of the good qualities of those we now have and avoid using them for unsuitable purposes.

A backward glance at the purposes of anesthesia will give us something upon which to hang our estimates of what we can best do with agents now available for intravenous use.

The purpose of anesthesia is twofold: (1) to spare the patient the pain or discomfort of the surgical procedure, even to make him unaware of it; and (2) to produce whatever degree of muscular relaxation the surgeon needs in each instance, to facilitate operative procedures.

The first purpose I believe may be satisfied for a large number of patients, in a large number of surgical procedures, with well administered, local anesthesia or regional block including spinal block. For many other people and in many other procedures, without unconsciousness, there is not sufficient unawareness for their comfort, either mental or physical or both. It may be only a matter of mental pictures that will not down, or operating room sounds that cannot be erased, or physical discomfort due to lying motionless on an unyielding surface. If unconsciousness is needed or helpful, the patient should have it. Vocal anesthesia, an attempt to declare that the patient is not uncomfortable though he says he is, belongs to the Dark Ages, but of course anyone knows that tactful conversation and helpful service can do very much to assuage restlessness and some discomfort. General anesthesia provides unawareness through unconsciousness.

The second purpose, that of relaxation, has two physiologic factors to overcome; the activity of the reflex arc and the matter of normal muscular tone. The reflex arc may be interrupted at any point, either on the sensory afferent side or on the motor efferent side. Muscle tone must be abolished by blocking the efferent supply somewhere between the brain or spinal cord and the muscle. Local or block anesthesia, properly applied in regions where such block is practical, abolishes both reflexes and muscle tone. Suitable general anesthetic agents in sufficient concentration block reflex arcs and abolish muscle tone. The various anesthetic agents and methods differ a good deal in their efficiencies and modes of attack upon these physiologic factors. In addition each one exacts a physiologic cost for the specific results obtained. In employing any of them in any instance one should be critical that the best bargain possible will be obtained for the cost that is likely to be imposed.

Now what about the accomplishments of intravenously administered drugs in meeting all of the above indications?

For the uneasiness, fear, restlessness and minor discomforts of the patient under local or spinal anesthesia, especially if it seems unnecessary or undesirable that he be asleep, the outstanding remedy is intravenous morphine. The dose is given very slowly until relief is obtained or until respiration becomes too slow. I recall vividly a rather small old lady in her seventies who was having an eye operation under retrobulbar block which was obviously effective. It was needed that she coöperate by looking in different directions as desired. She was restless, shifting on the table, and entirely uncoöperative. She received one-third grain of morphine intravenously over a period of four minutes and became quiet, entirely coöperative and responded perfectly to questions during the remaining twenty-five minutes of the operation. One could never have known the suitable dose for her without giving it intravenously. Many a patient with not only restlessness but slight pain toward the end of a procedure under spinal anesthesia is spared more radical treatment by receiving intravenous morphine.

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This is also most useful if the patient is unprepared for, or distressed by, the use of the needles for local anesthesia, or is not sufficiently sedated for smooth and quick induction of general anesthesia. During the induction of anesthesia with an intravenous barbiturate, if the required dose seems to be waxing unusually large it should be intermitted by intravenous morphine, grain one-sixth to one-fourth. This will spare a large amount of the barbiturate and the total duration of sleep will actually be shortened.

Morphine has always been recognized as a most excellent analgesic and mental quieter for most people without in itself producing sleep except by very large doses. As anesthetists we use it for these characteristics.

Sodium pentothal is at present the outstanding intravenous anesthetic. I believe that no other one now available has characteristics enough better to warrant its preference.

Outstandingly sodium pentothal is a beautiful hypnotic, producing sleep which is incomparable in pleasantness both as it comes on and as it vanishes. All people like the sensation so much that there is a great demand for it even for all types of surgery. It is very effective in quieting states of mental excitement and confusion. However, an unusually large dose for anesthesia, with prolonged effect, may itself be followed by prolonged restlessness and even delirium.

Sodium pentothal practically never causes nausea and tends to prevent it when it might be expected from other causes.

This drug is also efficient in controlling convulsive and muscular hyperactive states of central origin, apparently by sedating the motor areas. A parallel effect is the production of seemingly good relaxation, with the removal of the stimulus for tone from the brain.

Amplitude and sometimes rate of respiration is considerably depressed, apparently by depression of the respiratory center.

All of the effects of sodium pentothal seem to be upon the brain rather than upon any peripheral nervous mechanism.

It is a very poor analgesic. It relieves the sensation of pain only by sleep, in contrast to such drugs as morphine, acetphenetidin, acetanilid, and even to some extent aspirin, which are analgesics much more than hypnotics.

Sodium pentothal leaves pain pathways and reflex arcs wide open. Active muscular movements occur in response to stimuli, especially those applied to the skin and to the pharynx, unless very large doses are administered. Therefore the relaxation referred to above is more apparent than real, for the moment the patient is stimulated the muscles fly into action.

The effect of anesthetic doses of the barbiturates upon the heart, as clearly demonstrated by Visscher,[6,7,8,9] is to lower the minute-volume output.

With the above outline of anesthetic and surgical requirements and the clinical effects of sodium pentothal, one should be able to define pretty clearly the uses for which the drug is suitable and the hindrances which contraindicate its use either completely or relatively.

The greatest contraindication I believe is cardiac decompensation and the only immediate deaths of which I have personally known have been such cases. If the heart is using its full capacity without reserve to maintain life, and the minute-volume is then lessened, the result is unfavorable. There are other anesthetics which do not do this to the heart.

Any condition which lessens the freedom of the airway contraindicates pentothal at least relatively and makes special measures for maintenance of an open airway necessary because of the depression of the respiratory center. Surgery and manipulation in and about the pharynx and larynx also is a relative contraindication. But sometimes there is no better solution for the problem and it must be met by using pentothal with as little disadvantage as possible. If one is adroit, an intratracheal tube may be introduced under pentothal, or this may be accomplished by using cyclopropane or nitrous oxide or ethylene with ether. Then having established the intratracheal tube one can continue with the combined use of pentothal and nitrous oxide with 30 to 50 per cent oxygen. This makes it possible to use the cautery or high frequency which is so often necessary in this region.

Nitrous oxide is a fairly good analgesic and helps considerably in making up for the deficiencies of pentothal. It lessens by a good deal the amount of pentothal required and should be established as almost a routine adjuvant for that reason.

The outstanding occasions for the use of pentothal are still the relatively short procedures which are not greatly stimulating and for which relaxa-

tion is not required. The typical best use of the drug is such that light anesthesia is maintained and the routine indication for more injection is some slight muscular movement. The great bulk of war surgery comes in this category and a large quantity of pentothal is used in Army and Navy hospitals. As far as I know they do not use it for intrathoracic or abdominal surgery.

The next great field of usefulness is for cases in which analgesia and relaxation is obtained by spinal anesthesia or good local infiltration or nerve block. Pentothal is then used only to provide unconsciousness and relief from weariness, nausea and other unpleasant accompaniments. This is a very worthy function indeed.

Minor vaginal work, diagnostic dilatation and curretage and transurethral surgery have provided the greatest use for pentothal and it seems to satisfy the needs of such work very well.

Because of the pleasantness of induction and awakening and the relative absence of anesthetic-produced shock as compared with ether, there has been a great tendency in some groups to use pentothal for abdominal surgery. This can be helpful if the surgeon thoroughly understands its limitations and its possible untoward effects and is willing to work accordingly. There is no argument against its use with spinal anesthesia. If the surgeon or the anesthetist will use local anesthesia freely and well to supply the analgesic effect and help with the relaxation, pentothal will supplement this beautifully and help to make up for any deficiencies the former may have. Even then the surgeon must be willing to get along with only moderate relaxation and manage his surgery accordingly. If the surgeon decides upon pentothal anesthesia and still calls for relaxation like that of ether or spinal anesthesia, the anesthetist is driven into the administration of overdosage, the patient then sleeps many hours, is much depressed, there is a high incidence of pulmonary atelectasis and other complications. This is exploiting the use of a good drug for an unsuitable purpose and can do only harm.

Pentothal is best used in 2.5 per cent solution. No definite or even approximate amount can be stated as that proper for induction. It should be injected slowly, about 1 c.c. each three or four seconds until unconsciousness arrives and then in 1 or 2 c.c. increments as indicated. A solution may be kept in the syringe for several days. Discoloration or precipitation have been the only good reasons we have found for discarding it.

Inasmuch as the subject of this symposium is "anesthesia in general practice," special words should be spoken regarding the use of pentothal for anesthesia in the physician's office. First, it should never be administered unless some person is present who is capable of properly holding the patient's jaw forward to insure an open airway. Second, it is doubtful whether it should be administered unless some good means of administering oxygen and artificial respiration is available, and one should exercise especial care that anesthesia is induced so slowly that respiratory arrest will certainly not occur. Thirdly, and no less important, is the post-anesthetic care of the patient. The patient may wake rather quickly and seem to be fully recovered so that he is able to answer questions very sensibly. It takes a much longer time, however, for him to develop accurate physical judgment and coördination. He should be kept in the office for a long enough time, or if he leaves the office he should go under the care of some person who will surely not let him get into difficulties, because he will for a long time be unable to judge speeds or distances such as the speed of an oncoming car, the length of time that it will take him to cross the street, the depth of a curbstone, or the breadth of a gutter. Many a physician has gotten himself and his patient into serious difficulty by allowing his patient to leave his office too soon.

In speaking of intravenous drugs in anesthesiology today one must not neglect to mention curare. This drug, which was used by South American Indians to poison their arrows, has now been purified and standardized. Its first reported use in anesthesia was by Griffith[3,4] in Montreal. It has since been reported largely by Cullen[1,2,5] at the University of Iowa and others. Its action is upon the neuro-muscular junction and it produces flaccid relaxation in approximately one minute after intravenous injection. It is used for this purpose in conjunction with light general anesthesia of any type. Cyclopropane seems to be its best co-worker but it may be used with ethylene or with light sodium pentothal. If with the latter, one must be especially careful that there is no respiratory depression before the curare is given.

The dose is from 40 to 100 milligrams depending upon the size and vigor of the patient and the depth of the general anesthesia. It may need

to be repeated in from 20 to 90 minutes. The intercostals are paralyzed in producing relaxation of the abdominal muscles, as they are with any of the general anesthetics. If too large a dose is given the diaphragm will also be paralyzed and artificial respiration with the anesthetic bag will have to be used until recovery takes place. Prostigmine is the antidote. Curare is not an anesthetic. It only produces relaxation. It is a very helpful adjuvant. It saves the patient a great deal of general anesthetic and leaves no after effect. I believe it should never be used unless the anesthetist is sure that the mask can be made to fit tightly and the airway can be kept fully open so that artificial respiration can be done effectively if need be. In fact, artificial respiration with the bag should be actually tried before the curare is given. Curare is effective in relieving persistent laryngospasm which is one of the anesthetist's great antagonists. If other forms of respiratory obstruction can be ruled out but laryngospasm exists, curare may be used.

Curare is not a cure-all, If the surgeon's difficulty in exposure is due to rigid lower ribs or deep narrow pelvis, but the muscles are loose then curare will not help. If the difficulty is that of too active breathing or a bouncing abdomen because of partial obstruction or carbon dioxide accumulation, then of course the trouble must be corrected by adjusting the inhalation technique, not by blindly adding curare. In any case, however, with other difficulties controlled as best they may be and anesthesia maintained in a light surgical plane, curare will provide the needed relaxation. It is undoubtedly destined to supplant much of our spinal anesthesia and very deep general anesthesia.

An interesting thing is that patients who receive this type of anesthesia treatment do so well that one wonders whether Crile and others were right in their belief that the afferent pathway must be absolutely blocked to avoid brain trauma and shock.

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ANESTHESIA AND BREATHING

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TO embrace the new solely because it is new is false doctrine. To discard the old solely because it is old may be equally unwise..

The first clinical anesthetic I was privileged to administer thirty-five years ago gave as great satisfaction to patient and surgeon as has any that I have administered during the past year. It consisted in dropping chloroform upon a clean handkerchief draped over the index finger of my left hand held above the nose of a husky middle-aged farmer. He had broken his thigh and had been moved to a bed in the farmhouse. The drops were regulated under the instruction of the farmer's family physician—instructions made very explicit for the benefit of a green and inexperienced prospective medical student. The induction was not unpleasant for the patient; it was tranquil for me to observe; and the relaxation was all that could be desired for the alignment of the misplaced fragments of the femur. Recovery took place as I continued to sit beside the bed supporting the patient's chin while the physician packed his bag and visited with the family. With a less perfect first experience perhaps I would now be specializing in dermatology.

What might have happened on that day to spoil my pride and pleasant memory of the occasion?

Had not each word that was said been most carefully chosen, had not each move that was

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made been most carefully supervised by the physician, as he appeared to be arranging his splints and bandages, trouble could have supervened at any time during the administration. By an ill-advised remark the tranquil faith that all was well might have been destroyed. By too rapid or uneven an increase in the number of drops of chloroform falling upon the handkerchief, irritation, coughing, mucous secretion, breath holding, vomiting or adduction of the vocal cords might have occurred. By too tight an application of the handkerchief about the face or by the use of too thick material, movement of atmosphere through the cloth and vaporization of the agent might have been impeded. By continuing too long, the rapid dropping necessary finally to produce profound relaxation of the muscles of the thigh, breathing might have become shallow or inefficient or have ceased altogether. After the administration was finished, failing to support the chin until muscular relaxation had passed, obstructed breathing might have impeded the exhalation of chloroform and thus prolonged recovery.

With such a happy demonstration, so early in my personal experience, of the ideal effects which can, under certain conditions, be produced by chloroform, why, I wonder, did I for many years fail to recognize the importance of the mechanical and incidental by-effects of anesthetic drugs? In my second year of medical study, it was demonstrated that chloroform was an ideal agent with which to poison the liver. That it was capable of serious interference with cardiac automaticity was proven beyond doubt. Its capacity to stop the heart's action was made clear. I was taught to believe that these toxic properties of chloroform made its use justifiable evidence of criminal practice. I steered clear of possible legal entanglements.

During the intervening years and a reasonably extensive experience with many other agents which produce general anesthesia and local analgesia, I have come gradually to realize two facts: the first that relief from pain is purchased always at a price, and the second, that the price in both morbidity and mortality does not greatly differ, whatever the agent or agents used. The mechanism by which damage is done varies with different drugs, but the price in morbidity and mortality is relatively the same. Regardless of drugs used, about one patient in every thousand subjected to surgical operations in our modern hospitals dies before leaving the operating room. In evaluating the cause of death in these cases, anesthesia plays at least some part in over half of them. A great many more than one in every thousand have the severity of their postoperative period increased, and in some cases with death the final result. Some of these must be laid at the door of anesthesia.

It is my purpose to discuss what appears to be the cause of a major portion of this cost to which our patients are subjected when we bring them comfort. For the price is exacted in wards and in the bedroom as well as in the surgical pavillion. It is exacted from the patient who suffers from a painful illness or injury as well as from the one who is subjected to a surgical operation. No matter which of the dozens of available drugs may be administered for the relief of pain nor in what combinations, the price of peace, the cost of comfort, is always asking to be paid. Whether collection is made or not depends upon us.

Rarely in the past thirty-five years have I again experienced conditions so ideal, or perhaps I ought rather to say, rarely have I been so well instructed, as to administer any drug without at least some risk of embarrassment to breathing. For each patient who has died following anesthesia with yellow atrophy of the liver, dozens have died because the oxygen supply to their livers and kidneys was depleted through inadequate breathing. For each patient who has died from postoperative pneumonia due to irritation of his lungs with the vapor of ether, dozens have died from pneumonia following mechanical obstruction to their air passages. For each patient whose heart has stopped during anesthesia because of drug effect on the autonomic mechanism which controls it, the hearts of dozens of patients have stopped because the larynx was flooded with vomitus. Perhaps we ought to worry more about the careful supervision of the breathing of our patients and less about our choice of drugs to prevent pain; more about our own personal knowledge and skill with a particular agent or method and less about how someone else says he gets the best result. We should at least admit the mechanical dangers and emphasize the technical management which will minimize the hazard.

Roughly, in order of the frequency of their occurrence, I shall discuss a few complications in the administration of anesthetics.

Obstruction to Breathing

Relaxation of the Masseter and Pharyngeal Muscles.—A moderate dose of opiate or barbiturate may cause this, especially in the toothless. The debilitated and the injured are so embarrassed on occasion even with little or no effect of drugs. The damage to breathing comes through the base of the tongue "falling back" to obstruct the glottis or pharynx. Noisy breathing makes the diagnosis easy. When accompanied by considerable central depression of respiratory exchange, the noise may be absent. I have missed altogether recognition of obstruction from this cause. On a certain occasion a patient, anesthetized with ether, with an artificial pharyngeal airway in place and connected to a spirometer, made no sound and appeared to be breathing freely; yet a considerable increase in exchange took place when the position of the head was adjusted. An adequate endotracheal airway, such as a rubber tube through nostril or mouth and passing through the glottis, is complete protection. A pharyngeal airway is useful. Adjusting the position of the head may help. Holding the chin up and the mandible forward may be tried. Most important is it to remember that the lateral position with face turned toward the floor requires no equipment and permits the weight of the structures themselves to bring them away from the glottis.

Vomiting.—When this occurs, instant change to the semi-prone position may prevent obstruction of the air passages and aspiration into the lungs. Wiping or suction from the pharynx, if immediately available, will serve.

Reflex Adduction of the Vocal Cords.—Reflex closure of the glottis was designed by nature to protect the lungs from contamination with undesirable substances. Irritant atmospheres and solid and fluid matter, in normal circumstances, are thus kept out of the trachea. People who are extremely ill, who are depressed by drugs or who have suffered injury involving certain of the cranial nerves, do not have a normal laryngeal reflex. It is also true that reflex adduction of the cords may occur in anesthetized patients when certain regions of the body are stimulated by the surgeon. Under inadequate anesthesia, trauma to the external genitalia, the retropelvic, upper abdominal and mediastinal areas may stimulate this reflex. Proper dosage of proper drugs can prevent reflex cord adduction whatever the stimulus applied. Less difficult in some cases may be the insertion of a laryngeal airway in anticipation of the event.

In any case, we must remember that the laryngeal reflex is a normal life-saving mechanism. When it is depressed or abolished, the physician must provide means of protecting the lungs from harm until the reflex is restored. Nature's second line of defense, when the glottis fails to close at the proper time, is the cough. Since this mechanism is usually depressed or absent coincident with the laryngeal reflex, contamination of the trachea demands that it be cleansed by the physician through gravity or suction.

These three circumstances, relaxation of the muscles about the pharynx, vomiting, and hyperactivity or hypoactivity of the laryngeal reflex, constitute the most frequent conditions likely to bring disaster through obstruction to breathing.

Depression and Cessation of Breathing

All drugs which relieve pain can decrease the ventilation of the lungs or even stop breathing entirely. Whether relief of pain or adequate anesthesia are secured without these undesirable effects will depend to a large extent upon sensible and attentive management. Call it skill and experience in administering the chosen drugs, if you will, it really is only rational application of knowledge possessed by every physician. The susceptibility of patients, however, differs. Mistakes occur. Skill may be lacking. Unexpected accidents overtake us. Rarely are these of serious moment if proper measures are instituted at once. This statement applies even in the case in which breathing suddenly ceases.

Diagnosis of the condition is usually obvious. In a case of respiratory obstruction, visible movements are present and often exaggerated. Experience and skill may be required in the recognition of obstruction and the identification of its cause. Not so with depression or arrest. Anyone can recognize it. The question is, what to do about it.

Personally, I have had little or no success with analeptic drugs. We do not use respiratory stimulants other than carbon dioxide. Oxygen therapy is a temptation. It improves the appearance of the depressed patient to an amazing extent, but it is a two-edged weapon. Often the improved comfort and appearance of the patient, the slower

rate of pulse and respiration and the more normal blood pressure serve to allay the apprehension of the physician as well as that of the patient. Meanwhile inadequate ventilation and high oxygen tension in the blood serve to allow the accumulation of carbon dioxide in the tissues. If long continued, the latter circumstance may become as detrimental as the former condition. Since the patient is pink, depression may be continued by further administration of drugs.

The most logical and the safest management of respiratory depression or arrest consists of two measures. Decrease the concentration of the agent in the blood bathing the centers and augment or replace the depressed or arrested exchange in the lungs by artificial means. Volatile and gaseous agents have the advantage of being immediately susceptible to the first treatment. Their concentration may decrease even more rapidly by using the second measure. In the case of nonvolatile agents, dependent on the detoxifying powers of parenchymatous organs, it is well to bear in mind that the presence of adequate oxygen is essential to the detoxifying process. In any case, time and normal physiologic activity will reduce the concentration. The suggested second measure may therefore support the first.

The simple manual maneuvers for artificial respiration or augmentation of it are adequate. So is direct inflation of the lungs with a face mask and breathing bag or by the physician's blowing through the nose of the patient. The important fact which must be emphasized to our nurses, orderlies and other attendants as well as to ourselves is that artificial respiration or artificial augmentation of breathing are not heroic measures to be reserved for the dead and dying and to be done by the policeman and the fireman. They are ordinary, every-day procedures to be instituted at once, simply, calmly and without haste and roughness, whenever and wherever there is need for them. A hospital orderly has saved the life of a patient on the elevator by placing him in the semiprone position on his cart and producing a few artificial respiratory cycles by manual maneuvers. Other passengers and the elevator operator scarcely realized that anything unusual was taking place. A dozen doctors called to the assistance of the patient a moment later when he arrived in his room could not have helped him.

All general anesthetic drugs reach the central nervous system in the blood vessels. They may enter the blood through a needle puncturing a vein, through the mucosa of the gastro-intestinal tract, by hypodermic injection or by passage through the membrane between the alveolus of the lung and the pulmonary capillary. The portal of entry is a one-way street in every case but the last. Volatile and gaseous agents may go out the way they came in as long as breathing continues. The others, for the most part, must await destruction within the body before they are eliminated.

Analgesics, soporifics, narcotics all produce effects differing only in degree from those of anesthetic agents. Usually the doses are not adequate seriously to embarass breathing. However, the hazard is present even when remote.

Locally acting drugs for local anesthesia, nerve block, spinal analgesia, et cetera, occasionally have systemic effects. These are manifest mainly in embarrassed breathing. A convulsion soon becomes a respiratory crisis.

The greater danger to our patients is not the direct toxic effect of drugs upon the cells of the body but the incidental effects of the drugs upon the vital physiologic functions. Even circulatory collapse is benefited more by free breathing, artificial when necessary, than by any drug.

Protection of our patients may therefore consist in attention to the maintenance of adequate breathing while we obliterate their pain rather than in everlastingly changing to the use of every new drug and new technique of administration which may be suggested.

The methods of correcting insults to respiration are the same, whatever drugs are used. Until we are conversant with those methods, we are dependent for safety solely upon our skill in administration. With knowledge of these methods, we are probably relatively safe in using any drug with which we are familiar.

SOME RECENT ACTIVITIES OF THE AMERICAN MEDICAL ASSOCIATION

HERMAN L. KRETSCHMER, M.D.
President-Elect of The American Medical Association
Chicago, Illinois

MR. President and members of the House of Delegates: It is with much pleasure that I bring to you the greetings and felicitations of the American Medical Association.

The American Medical Association, as every one of you knows, is doing everything possible to aid the winning of the war. You will agree with me, I am sure, that the Association has done much toward this end. When it was evident that the war clouds were gathering on the horizon, the Association undertook the classification of all physicians of the country. This list was immediately placed at the disposal of the armed forces and was a great aid to them when hostilities began. From that time the problems connected with the war effort have steadily increased and they are still on the increase.

I should like to point with pride to another early project of the Board of Trustees, namely, the authorization to publish "War Medicine," bringing to the men in the armed forces the latest advances in medical and surgical developments related to the war effort. I know of no more timely or important contribution to medical journalism anywhere in the world. The work of the association has been accomplished under great difficulties. It may interest you to know that 20 per cent of the personnel of the headquarters office are either in the armed forces or are rendering service to your government. In spite of this shortage of trained personnel, the amount of work has increased about 20 per cent. Here, as in any organization, the turnover in employes is rather rapid and I know that you realize just what this means. It means a special kind of training; then, after the employes are trained, some leave for other more remunerative positions. New personnel must be secured, which means training a new group of people, which adds to the work of the office. Yet, in spite of this, the work continues in a most satisfactory manner. This increased burden of work and responsibility rests not only upon the headquarters staff, but also on the various councils, bureaus, and the Board of Trustees.

I wish to take this opportunity to speak a word of praise and admiration for your Board of Trustees. It has been my privilege to sit, not only with the board, but also with each meeting of the executive committee, during the past ten years. This board, as you know, is representative both as regards the various sections of the country and also as regards the various fields of medical practice. I have had, since the first time I sat with this board, nothing but admiration for their devotion to duty. They are faced with many serious problems which are always weighed with a great deal of care; the policies are discussed at great length and deliberation. I have yet to find a member of the board who takes his job lightly and who does not give the very best of which he is capable. Not only do these men travel great distances in coming to and from the meeting, but the amount of "home work" is almost staggering.

This is not a closed corporation as has been alleged. Any member of the association may bring his problems to the board. Many have done so and have always expressed appreciation at the reception and consideration given to them. Nor has anyone during this time tried to dominate their deliberations and conclusions.

It seems to me that the members of the medical profession, particularly the members of the House of Delegates of this association, should familiarize themselves with the work of the association. I would strongly urge every member of this House of Delegates to pay a visit to the headquarters office. I am sure you will be well repaid for your time and your efforts. Of course, there are criticisms of the association. I listen patiently. Then I always ask this question: "Have you gone through the home of the association and seen for yourselves whether or not you have been reliably informed?" Only too frequently, I am sorry to say, the answer is: "No, I have not."

Of the many problems that confront the physicians of this country today, I am sure none

Delivered at the Annual Meeting of the House of Delegates of the Minnesota State Medical Association, Rochester, Minnesota, April 12, 1944.

exceeds in importance the Murray-Wagner-Dingell bill. I am sure you have read this bill and have given it your most serious consideration. No piece of legislation has received as much consideration from not only the physicians of this country and men in allied professions, but from business executives and members of other professional groups. As an example of this interest may I call your attention to the detailed study of this subject by the American Bar Association. This comprehensive study was published recently† and is worthy of careful study by every citizen of this country.

I have had the opportunity of talking with many bsiness executives who seem to be impressed by the fact that they, and they alone, are carrying the ball. They tell me that the doctors in their community are not much interested and they wonder why the doctors are so indifferent. I am certain that you will not agree with this statement because I know every member of this House of Delegates has been interested in this bill.

I was greatly interested in a recent conversation with a business executive. I was interested in his reaction to my statement that the doctors have been interested, and that, as long as twenty-four years ago, Dr. Whalen, then a delegate from the Illinois Medical Society, introduced a resolution into the House of Delegates on the subject of socialized medicine. This business executive was surprised.

In view of the fact that this bill concerns every physician in the country, every physician should devote at least two hours every day toward educating the people in his community as to just what this bill means in the way of increased taxes and a deterioration of the quality of medical services and the limitations in the choice of their physician. In other words, I believe that every doctor should be his own one-man propagandist. No one is in a better position than the physician himself to convince the people what this means in the cost and in the quality of medical service.

There has been manifest a good deal of objection to raising the social security tax up to 6 per cent. I have been informed that a proposal has been made to delete the medical provision of this bill and then to pass it. This, however, will only be a breathing spell. But I believe we should continue our educational program to our patients, to our neighbors and to our "cronies." I do not believe the fact that the medical provision of this bill will be deleted is any guarantee at all that another bill will not be introduced or an addition made to the present Wagner Act at some subsequent time.

There is nothing new in this technique. It is a part of the planned economy. Ever since the days of Rome, attempts have been made, and in nearly every civilization, to provide so-called short cuts to perpetual prosperity and short cuts to social security. What does the record show? Loss of individual freedom, utter collapse, and chaos. In our education of the public we should call attention to what has gone before as far as the individual and his freedom are concerned.

And while I am on the subject of this bill, may I discuss with you for a moment the splendid work that has been accomplished by the National Physicians Committee. One of your own members, Dr. Braasch, is a member of their Board of Trustees and he has taken a most active part in their work. The results of the survey conducted by them is most interesting and I do not know of any organization which could have done a better job. As Dr. Morris Fishbein recently stated in an editorial published in the *Journal of the American Medical Association,* "In making this survey the National Physicians Committee has rendered a distinguished service to American medicine."

This report is available to each of you and I think it would be well for you to get a copy of this report and to give it your most serious study.

I was greatly interested in the lack of physicians' interest in this committee as revealed in the last report just received before leaving to attend this meeting. This recent release shows that only 4,205 physicians made contributions toward supporting the work of this group. Personally, I cannot understand this bland indifference.

One hears much, shall we say, loose talk about how bad we are in with the public. I have always thought this was an old bromide; as a matter of fact in the first issued of the *Transactions of the American Medical Association,* published in 1847, there appears a similar statement with reference to certain practitioners of medicine. What are the facts in this so-called "smear" campaign?

†Journal A.M.A., Feb. 29, 1944.

In order to ascertain the opinion of the people about the American Medical Association, a Pilot survey was undertaken by the National Physicians Committee. This revealed the astonishing facts that the people interviewed believe that the American Medical Association is interested in the development of new techniques, that it is interested in keeping high standards of medical practice and in safe-guarding the medical products used in the treatment of the sick. Interesting was the fact that less thaan 10 per cent thought of the American Medical Association as a union or medical trust.

The conclusions that may be drawn from the recent report of the National Physicians Committee are that the American people do not want political medicine. They want and demand free choice of physicians; and they believe that their doctors have a personal interest in them.

Another enlightening fact brought out by the survey was the fact that a large number of people are familiar with, or participate in, prepayment plans. Interesting, but not surprising, is the fact that those who participate in these plans approve of them and think they are better off with them than without them. A large number of the people interviewed believe that some plan for easy payments should be established to provide for the payment of costs of prolonged and unusual illness. This report should be of great value to all interested in the plans for the extension of medical service, and no doubt will receive consideration by the new council on medical service and public relations established by the House of Delegates of the American Medical Association at the last annual session.

I do not believe that any one plan is the answer. The problems vary in different sections of the country. The plan that is feasible in one section of the country under existing local conditions may not work in another section, with an entirely different set of local conditions.

These plans must be under the control of the physician because after all it is he who renders the service to the patient. This principle must never be relinquished because without it there is the danger of deterioration in the quality of medical care. Nor must we overlook the fact that in the midst of this idealism there lurks the possibility of abuse. I am of the opinion that the present increase in bed occupancy in hospitals is due to the fact that many now have this coverage. Because it is human nature to get your money's worth, not only do they go in more willingly but often demand to be sent to the hospital for trivial ailments, not illnesses that justify hospitalization, and there is in some patients a tendency to stay an extra day or two.

Keenly aware of the fact that with the cessation of hostilities there would arise definite problems in the postwar period, the Council on Medical Education and Hospitals has undertaken a study of postwar graduate medical education. It is apparent that many thousands of physicians whose hospital training has been interrupted will desire to complete their studies. Interns and residents are vitally concerned. This means that the present facilities for residencies, fellowship and postgraduate courses will have to be increased and new ones developed. Fortunately, this program was started before the demand arose so that the survey of opportunities and the development of this program can be carried out without sacrificing the high standards set by the Council.

A questionnaire has been sent to 3,000 men in the armed forces and is now being sent to all physicians who are in the Army, the Navy, or the United States Public Health Service. This questionnaire asks the man just what he would like to do when he returns from the war. Fortunately, the majority of the young men who graduated during the past five years indicate that they want to extend their medical education, to return to internships, or incompleted residencies. Some of them want to take extra work to qualify for the certifying boards.

The Council on Medical Education and Hospitals of the American Medical Association, working with other educational agencies, is going to do everything possible to work out plans and arrangements to give these men what they want.

Other portions of the questionnaire ask the physician to indicate whether or not he wants to go back into practice, and, if so, the nature of the community in which he would like to serve. There is every indication that most of the men who had been in practice more than five years before the call to war want to return to the community from which they departed. Many of them want courses in which they can brush up regarding advances in medicine. Opportunity

(Continued on Page 928)

PEDIATRIC-PATHOLOGICAL CONFERENCE

DULUTH PEDIATRIC SOCIETY
O. W. Rowe, President

ST. LUKE'S HOSPITAL
Arthur H. Wells, Pathologist

VOLVULUS IN THE NEWBORN

With a Report of Five Fatal Cases

R. P. BUCKLEY, M.D., and ARTHUR H. WELLS, M.D.
Duluth, Minnesota

Five cases of volvulus of the small intestine in newborn infants will be presented. They occurred on a basis of congenital defects in the development of the mid-gut. Brief necropsy findings in each case will be described, and a discussion of the general subject will be included.

Dr. R. P. Buckley: A premature, 2455-gram boy was born on December 19, 1942, and died on the 29th. The child was doing nicely until his tenth day when he had become listless, cyanotic and his abdomen was distended. There soon developed a continuous bile-stained discharge from the nose and mouth with a foul odor. A grossly bloody rectal discharge was noted. No abdominal masses could be felt. The infant died on his eleventh day while being prepared for a laparotomy.

Dr. G. Berdez: I found a counterclockwise rotation of the jejunum, ileum and mesentery through 180° with extensive hemorrhages, edema and necrosis of the walls of the twisted gut. There was a moderate diffuse peritonitis. The stomach and duodenum were markedly dilated with gas and bile-stained fluid. There was mild dilatation of the remainder of the small intestine and the colon was contracted.

Dr. S. N. Litman: This girl was a full-term spontaneously delivered infant, weighing 6 pounds 2 ounces. She started spitting up and vomiting bright green fluid the first day. I saw the child 48 hours after birth. She had not retained anything taken by mouth. There were several meconium stools and she weighed 5 pounds 3 ounces. She had a shrill cry, her temperature was normal until the day before death when there developed a low-grade fever. At this time the red blood cell count was 2,400,000 hemogloblin 72 per cent, white blood cell count 2,400. On the eighth and last day she had a five-hour retention of barium in the stomach. There was a duodenal distention, practically no barium had passed after nine hours and the clinical diagnosis was complete obstruction of the third portion of the duodenum. The temperature had reached 107°. The child's condition was critical and laparotomy was not attempted.

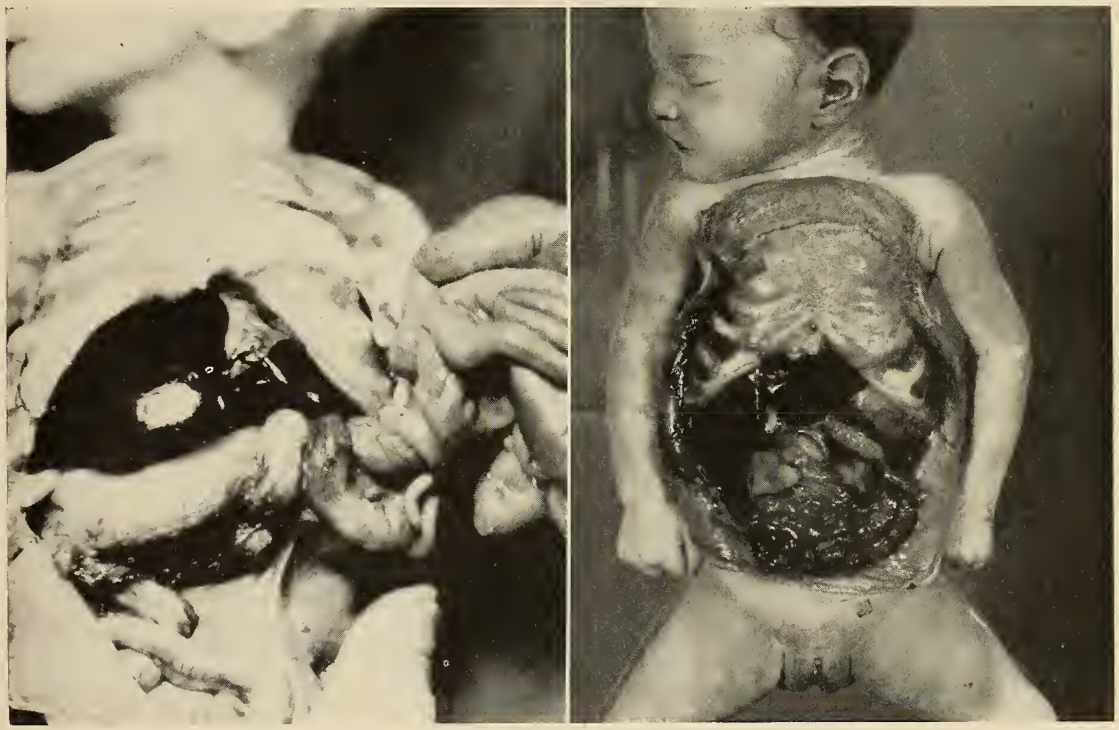
Dr. A. H. Wells: Necropsy findings (Fig. 1) were those of a congenital defect of the mesentery, abnormal rotation of the small intestine and the complication of a torsion of the jejunum and ileum in a clockwise manner through 720° resulting in a collapse of the jejunum and ileum. The cecum was not involved in the torsion and it was in its usual position. There was no attachment of the mesentery along the posterior abdominal wall excepting through the superior mesenteric artery. The stomach and duodenum were severely distended and their walls were rather thin. This distention stopped sharply at the onset of the jejunum and the beginning of torsion. There was no gangrene of the intestines; however, there was a mild terminal bronchopenumonia.

Dr. R. P. Buckley: This full-term, spontaneously delivered, 6 pound 13½ ounce baby boy was born April 24, 1937, and died June 19, 1937. The child was in good condition except that he started vomiting a half hour after birth and continued vomiting several times every day and on occasions vomiting everything taken by mouth. At times fluids were retained. On May 3, 1937, there was distinct improvement and no vomiting during the next five days. There was no apparent pain. He developed a purulent discharge in the left eye. The recurrent vomiting was rapidly controlled and the staphylococcus aureus and non-hemolytic streptococcus infection of the left eye rapidly cleared up. On May 22, 1937, he started vomiting again. There was some improvement in the vomiting after the next few days, however, visible peristaltic waves were seen over areas of the abdomen. The white blood cell count was 10,100 and the hemoglobin was 16 grams on June 5, 1937. Repeated gastric lavages, saline hypodermoclysis and repeated small blood transfusions from the mother were used. A partial duodenal stenosis was considered most likely from clinical observations at this time. A barium meal and fluoroscopy study revealed partial obstruction in the duodeno-jejunal junction on June 9, 1937. The infant gradually lost ground and on June 14, 1937, an exploratory laparotomy through a left rectus incision under local anesthesia revealed several large rounded, palpable but not visible masses near the root of the mesentery practically in the lumbar region. A rubber catheter was left in a loop of small intestine. The vomiting recurred two days after the operation and continued until the time of death on June 19, 1937.

Dr. A. H. Wells: Necropsy revealed a congenital abnormality (Fig. 2) characterized by an absence of mesenteric root attachment to the posterior abdominal wall, excepting through the mesenteric vessels at their usual site. The duodenum was entirely in the abdominal cavity. The lower ileum followed a peculiar course in which it passed up to the left over the entire small intestine and mesentery and back down to the right lower quadrant where it entered the cecum near the proper site. The colon was not unusual. The stomach and duodenum were considerably dilated and their walls thickened. The duodenum measured 4 cm. in diameter, while the remainder of the small intestines although mildly distended did not measure more than 2 cm. in diameter. There was a torsion of the entire ileum and jejunum about the superior mesenteric ves-

sels in a clockwise manner through 450 degrees constricting several turns of small intestines to the point of partial occlusion. The torsion was most marked at the duodeno-jejunal juncture. An acute generalized peritonitis of moderate grade was found and cultures

Dr. A. H. Wells: The necropsy revealed a congenital defect of rotation of the small intestine and cecum with elongation of the mesentery and the evidence of the previous torsion. The mesentery of the small intestines was attached to the posterior abdominal wall



Torsion of the jejunum and ileum on the superior mesenteric vessels.

of the peritoneum revealed staphylococcus albus and B. coli. A postmortem blood culture had B. pyocyaneous.

Dr. R. E. Nutting: This sponstaneously delivered, full-term, physically well-developed infant was born on July 11, 1940, and expired on August 8, 1940. The child began vomiting on the third day of life and continued vomiting or regurgitating fairly large amounts of fluid practically every day thereafter. The birth weight was 3125 grams and in spite of the vomiting the child increased in weight after a few days. The persistent and forceful nature of the vomiting accompanied by peristaltic waves over the upper abdomen led to a suspicion of hypertrophic pyloric stenosis; however, there was a period of improvement and operation was deferred. The weight gain was insufficient and vomiting continued intermittently. On August 7, 1940, the boy's condition suddenly became much more critical. There was a distention of the abdomen which was not relieved by decompression. The white blood cell count jumped from 10,000 to 23,000 in twenty-four hours. The temperature had risen from 98.6° to 103° in the preceding forty-eight hours. An x-ray film of the chest was normal. The child was practically moribund. The abdomen was markedly distended and there was fluid in both flanks. There was no peristalsis; the abdominal wall was somewhat blue. There was a bloody stool. Through a right rectus incision under local anesthesia a complete torsion of the jejunum and ileum was found with gangrene of intestines. The gangrenous portion of small intestines measuring 80 cm. was resected and the two ends brought out on the surface of the abdomen through the operative wound. The child was an extremely poor operative risk and left the table in bad condition to die the following morning.

for a distance of only 3 cm. below the superior mesenteric artery. The mesentery measured 14 cm. in length, from this mesenteric attachment to the most distal loop. The cecum was free in the abdominal cavity and located at a point near the midline in the lower abdomen, while the ascending colon was attached loosely in its approximately normal position. There remained the evidence of torsion of the entire ileum and jejunum on the superior mesenteric artery. There were swelling and small hemorrhages throughout the mesentery and in the gut wall with light reddish and bluish discoloration of the remaining 9 cm. of jejunum and 60 cm. of ileum. The intervening 80 cm. of small intestine were hemorrhagic and gangrenous when they were removed at the time of the laparotomy. There was a mild but distinct hypertrophy of the walls of both the stomach and duodenum. Peritoneal surfaces had a diffuse, moderate injection and a very light fibrinous exudate, which was characteristic of an acute generalized peritonitis. There were mild toxic changes in the myocardium, liver, spleen and kidneys. The left testicle was in the inguinal canal.

Dr. C. H. Schroder: This baby boy was prematurely born on September 14, 1944, and died on September 16, 1944. His weight was 1610 grams and length 43 cm. He was put in an incubator and given continuous oxygen. His color was fair. He cried vigorously but was considered a small and weakly infant. He was fed by dropper and later by gastric tube. Slight cyanosis developed and a mild elevation of the temperature was noted from the time of birth, reaching 102° at the time of death. The child seemed to be progressing fairly satisfactory until his last day when two hours before

his death his breathing became labored, color poor and he started vomiting and would not take his feeding. Respirations became shallow and labored. The vomiting of bile became continuous. The cyanosis increased and breathing became gasping. There was much perspiration. A small mass could be felt in the right upper quadrant of the abdomen shortly before death.

Dr. A. H. Wells: Necropsy again revealed a congenital abnormality of the mesentery characterized by an unusually long mesentery measuring 5 cm. at its longest point into a loop of lower ileum measuring 21 cm. long which had twisted through 900 degrees in a clockwise manner resulting in a deep reddish purple gangrene throughout this loop of twisted gut which extended to within 2 cm. of the ileocecal valve. There was a normal attachment of the root of the mesentery of the small intestine and the cecum was in its proper position. There was a small Meckel's diverticulum measuring 1 cm. in length with a broad orifice. There was in addition a diffuse but mild injection of peritoneal surfaces with a light fibrinous exudate throughout the abdominal cavity. Strangulated loops of intestines were moderately distended while the remainder of the small intestine had only a mild distention.

CLINICAL FEATURES

Newborn	Vomit. Onset	Abd. Pain	Abd. Dist.	Palp. Mass	Bowel Move.	Perist. Waves	X-ray Diag.	Fever	Surg.	Day of Death
1	10th day	0	Late	0	Late Bloody	0	Not Done	Late	0	11th day
2	1st day	0	0	0	+	0	+	+	0	6th day
3	1st day	0	Late	0	+	+	+	Late	+	56th day
4	3rd day	0	Late	0	Late Bloody	+	Not Done	+	+	28th day
5	3rd day	0	Late	+	+	0	Not Done	+	0	3rd day

Discussion

Dr. A. H. Wells: A brief review of the five cases just presented is found in the accompanying table.

Volvulus in early childhood is generally the result of a congenital defect in the mid-gut. In their presentation of nineteen cases of volvulus directly traceable to errors in intrauterine development of the gut, McIntosh and Donovan describe a variety of abnormalities encountered in these patients. Knowledge of the more common variations of malrotation of the gut is a prerequisite to proper surgery. Dott describes the important congenital defects leading to torsion as including a long relaxed mesentery, short attachment of the mesenteric root, shortening of the vertebral attachment to the posterior abdominal wall, insufficient flexion of the intestines, nonrotation of the common mesentery of the large and small intestines and an unusually long small intestine. To this may be added exomthalos, a condition in which there is a failure of the gut to recede from the umbilical cord. Congenital adhesions may be the cause of intestinal obstruction and are frequently associated with other defects leading to torsion and must be sought for in any case of volvulus.

Sweet finds that there is a greater frequency of volvulus among the Russians, Finns, Poles, and Scandinavians than other races. The comparatively coarse food and its resultant meteorism in these people is considered an important factor in the production of torsion. By far the most important cause of volvulus among the thirty-seven cases (involving all age groups) reported by McKechnie and Priestley was peritoneal adhesions. Twenty-one of the cases had acquired adhesions and most of these were the result of previous abdominal operations. Eight of their patients had congenital anomalies. These authors felt that the fixation of one loop of small intestine with the free mobility of the adjacent loop was the outstanding factor in production of volvulus. There is a distinct predominance of males over females amounting to as much as two to one in some group studies. No age group is exempt. It is found from early infancy where congenital defects of rotation are prominent to old age where tumor masses and adhesions predominate as etiologic factors. In a review of seventy-seven cases Lawson found that the sigmoid was involved in one-half of the total. The cecum was the next most common site and the least number occurred in the small intestines.

Dr. R. P. Buckley: The symptoms and signs of volvulus are those of intestinal obstruction and developing gangrene of the gut. Obstructive symptoms may be extremely low grade and result in recurrent attacks over a period of many years. More often there is an acute onset of symptoms, nearly always associated with nausea, vomiting and abdominal pain. The pain may be difficult to interpret in infants. Frequently there is constipation and even obstipation but this symptom must not be depended upon. The degree of abdominal distention is frequently related to the site of the volvulus so that if it constricts the first portion of the jejunum there may be very little distention excepting that due to the stomach and duodenum. Occasionally one can demonstrate peristaltic waves in the

upper abdomen. Tenderness and muscular rigidity are frequently missing until there is interference with blood supply and gangrene of the involved loops of intestines. With the development of gangrene, the symptoms of peritonitis rapidly present themselves with a rise in the temperature, pulse and the leukocyte count, all three of which were probably normal before the onset of necrosis. In a newborn infant where vomiting cannot be explained on the basis of cerebral hemorrhage or infection, torsion of the intestine must be considered seriously. Depending upon the age and sex of the patient many disease processes must be considered in the differential diagnosis of volvulus. They include ruptured peptic ulcer, acute appendicitis, strangulated umbilical hernia, renal colic, pyloric stenosis, ectopic pregnancy, acute pancreatitis and a host of other acute surgical abdominal conditions. The great bulk of cases reported in the literature were diagnosed preoperatively as acute intestinal obstruction, and it was left to the surgeon to find out the exact nature of the condition. An x-ray study following a barium meal is frequently diagnostic of the site of intestinal obstruction.

Many well-established, fundamental rules in dealing with intestinal obstruction and gangrene of the gut hold for the treatment of volvulus. It should be pointed out, however, that some surgeons feel that preoperative care in most cases is a loss of precious time and that chlorides, glucose and plasma may well be given at the operating table since the development of gangrene may be extremely rapid and seriously changes the prognosis. The specific etiologic factor behind the volvulus must be recognized by the surgeon as soon as possible. In adults this is most likely to be an acquired adhesion and in these patients there is a definite chance of recurrence no matter what is done. In infants and children the frequency of errors in rotation of the midgut plus the occurrence of congenital adhesions with or without other deformity must be kept in mind. McIntosh and Donovan, Ladd and Elman as well as others warn that these coexisting congenital adhesions must be sought for and released in every case of volvulus associated with other congenital abnormalities. If not relieved the torsion is likely to recur or an obstruction may result from the adhesions alone.

It is generally necessary to eviscerate the small intestine through the operative wound before the volvulus can be properly reduced. In fact the mistake of not recognizing volvulus at the time of operation, as in our second case, has been made a number of times as reported in the literature due to a failure to eviscerate the patient.

The prognosis depends upon the age of the patient, duration and severity of symptoms, dehydration, loss of chloride and the development of gangrene and its complications. Lawson reports on seventy-seven collected cases of varied age groups in which there were fifty-seven operations and twenty-five recoveries or 43 per cent. Weible found twenty-three recoveries in sixty-five cases. All successful operations were performed within forty-eight hours after the patients were seen.

Conclusion

Five newborn infants with varied congenital defects of the mid-gut developed torsion of the small intestines and died of intestinal obstruction or gangrene. In only two of the cases was operation performed. In one the operation was too late and in the other the volvulus was not recognized. Volvulus of the newborn deserves a thorough understanding by all physicians concerned with this special subject.

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TUBERCULOSIS IN ALASKA

Tuberculosis is by far the most important public health problem in Alaska. At least two factors now stand in the way of an effective program for its control; the lack of anything even approaching adequate hospital facilities, and the failure of the white population to understand the seriousness to them of the great numbers of cases among the natives.

Methods of finding and reporting cases are very poor, and there is an astonishingly large number of deaths that occur without any medical attendance so that the cause of death is given as "unknown." The figures for tuberculosis deaths are admittedly incomplete for these reasons. Even so, they represent death rates for whites of forty-eight per 100,000. The rate for the United States among white persons in 1940 was thirty-seven per 100,000. The native death rate of 728 is nearly fifteen times the rate for the United States.—Carl E. Buck, Dr. Ph. and G. Hays, M.D., *Alaska's Health*, December, 1943.

HISTORY OF MEDICINE IN WABASHA COUNTY

(Continued from October issue)

Biographical Dictionary

John Charles Adams was born in Inniskellen, Ireland, in 1831. He graduated in medicine from the University of Louisiana in 1857. During the Civil War he had a commission as surgeon with the Thirtieth Mississippi Regiment of the Confederate Army. In 1867 he was ordained as a minister in the Protestant Episcopal Church, and he came to Lake City the following year to be rector of the church in that town. In 1871 he was elected an honorary member of the Wabasha County Medical Society and resumed the practice of medicine and surgery the next year. He was elected to the state society in 1874 and was president of the county organization in 1876. For nearly forty years he served the community well. He was always progressive, active in medical societies, and a frequent contributor to medical journals. The minutes of the Wabasha County Medical Society meeting of January 10, 1878, contain reference to a case of peri-typhlitis in which the operation was performed with success by Dr. Adams. He was honored formally by his associates on his seventy-fifth birthday. He died in 1911.

W. T. Adams was born at Lee, Oneida County, New York. He came to Wabasha in the early seventies, graduated from Rush Medical College in 1875 and returned to Minnesota. After a few months in Plainview he located definitely at Elgin. He established a drug store in Elgin and was a capable and active practitioner in that locality for forty-two years. He was especially interested in medical societies. He was a member of the Wabasha County Medical Society (1875), the Minnesota State Medical Association and the American Medical Association. He was known as one of the founders of the Southern Minnesota Medical Association and served as its secretary for nearly twenty years. He was county physician during the nineties, and died in 1917.

W. A. Allen was a homeopath who practiced in Plainview from 1867 until 1872, when he moved to Rochester.

S. T. Armstrong practiced in Wabasha for a short time in 1880 when he took over F. H. Milligan's practice during the latter's absence. He was a graduate of the St. Louis Medical College and joined the Minnesota State Medical Society in 1880.

M. B. Axtell lived at Pepin, Wisconsin, but belonged to the Wabasha County Medical Society and was its president in 1874.

E. H. Bacon practiced in Mazeppa and was elected to the county medical society in 1872.

E. O. Baker located in Lake City in 1875. He moved to Durand, Wisconsin, in 1878, and, later, to Menomonie, Wisconsin.

A. E. Baldwin, of Plainview, was elected to the Wabasha County Medical Society in 1882. He was a graduate of the Chicago Medical College.

Emery H. Bayley was born in 1865. He was graduated from Rush Medical College in 1893, and after a year's internship at Asbury Hospital, Minneapolis, located in Lake City, where he was engaged in active practice until his death December 19, 1927. He was a member of the county medical society, and twice served as its president. He was especially interested in public health work, and served as county and city health officer and was president of the county tuberculosis commission for many years. He was chief promoter of the Buena Vista Sanatorium, the county's sanatorium for the tuberculous. He presented a number of papers before the various medical societies to which he belonged, many of which were published in medical and public health journals. He was a progressive practitioner and is said to have installed the first x-ray machine that came into the county. He gave frequent public health talks to lay audiences.

Joseph F. Bond was born in 1862, graduated from Rush Medical College in 1885, located in Wabasha in 1899, coming there from Montana. He was associated, first, with W. H. Lincoln but established himself independently about 1905 and remained in Wabasha until his death, March 26, 1941. He served on the pension board and was highly regarded in Wabasha. He joined the county medical society in July, 1901, and was elected president for one year from July, 1902, to July, 1903.

J. M. Bowen came to Wabasha about 1855 and remained until 1859.

A. C. Boyd practiced in Mazeppa and then (1880) in Millville. In 1881 he moved to Lewiston, Winona County. He graduated from Rush Medical College and was a member of the Wabasha County Medical Society (1881). He later became a member of the Winona County Society.

Chas. W. Bray, a graduate of the University of Minnesota, was associated with W. F. Milligan of Wabasha in 1896. He was a member of the county medical society.

Dwight F. Brooks, of Minneiska, attended the University of Michigan for one course in 1867. He became affiliated with the county medical society in 1874. He was active in local Republican politics and practiced medicine in that locality for many years. At a later date, he moved to Saint Paul where he was engaged in the lumber business.

Sheldon Brooks came to Minneiska from Winona County in 1860. He practiced medicine as the occasion demanded and served in the war. The larger share of his time, however, he devoted to the grain business. (See Winona County.)

L. P. Bunce was an oculist in Lake City in 1879.

Arthur J. Button located in Hammond in 1899. He was a member of the county medical society.

F. W. Calkins practiced in Mazeppa about 1888 and was a member of the county medical society. He was graduated from the Chicago Medical College in 1886.

F. E. J. Canney, a homeopathic physician and surgeon, practiced in Lake City in 1868 and 1869.

George F. Childs practiced in Minneiska from 1857 until 1860 when he went to Washington, D. C. He probably visited Minneiska for a short time, about 1854 or 1855, the intermediary time being spent in Winona County.

Leonard E. Claydon came to Millville in 1895 following his graduation from the University of Minnesota. He was later a partner of Dr. M. H. Cremer of Mazeppa. He was a member of the Wabasha County Medical Society and served as county physician.

Sheridan Cobb, a homeopathic physician, graduated from Hahnemann Medical College in 1884 and practiced in Plainview. He was originally from Rochester, and later moved to Saint Paul where he died.

Wm. J. Cochrane was born in Wabasha County in 1867, graduated from the College of Physicians and Surgeons in Chicago in 1895, served as intern for eighteen months at the Illinois Eye and Ear Infirmary and located, first, at Quincy, Illinois, where he practiced his profession from 1896 to 1899. In December, 1899, he located in Lake City. He served as Captain in the Medical Corps of the United States Army in World War I. After his discharge, he settled in Minneapolis where he practiced from 1919 to 1921, when he returned to Lake City. He continued his practice there until 1941 when he retired. He still maintains his home in Lake City. He has been president of the Lake City Hospital Board and also of the Buena Vista Sanatorium Commission for a number of years. Since 1901 he has been local surgeon for the Chicago, Milwaukee and Saint Paul Railroad. Though retired from general practice, he continues to hold these three positions and to take a prominent part in civic affairs.

James B. Cole was born in the town of Winona, and was graduated from the medical department of the University of Michigan in 1882. He began to practice in Minneiska, but after about a year moved to Winona County where he was associated with James M. Cole, his father. In 1887 he came to Wabasha. He was a member of the Wabasha County Medical Society (1887) and the state society (1883). About 1893 he suffered a serious attack of brain fever which resulted in his using opiates. He died in 1898 in Ann Arbor, Michigan, from a self-administered overdose of chloroform. He was about forty years of age at the time. Previous to his illness, he enjoyed a very large and lucrative practice. He was a Mason, an Odd Fellow, a Modern Woodman, a genial, kind-hearted person with many friends.

Charles W. Crary was born at Pottsdam, New York, in 1835. He graduated from Albany Medical College in 1858 and attended the Jefferson Medical College in 1870. He was captain of Company H, Ninety-Eighth Regiment, New York Volunteers, in 1861 and saw much service during the Civil War. He practiced in Lake City from about 1876 until about 1889, when he moved to Chicago. He was the author of a treatise on the history of homeop-

athy and was appointed a member of the Bureau of Clinical Medicine by the president of the state homeopathic institute in 1879.

M. H. Cremer located in Mazeppa about 1893. He served as county physician and was an officer in the county medical society. Later he moved to Red Wing.

E. C. Davis began to practice medicine in Plainview about 1876. He had studied medicine with Drs. Tefft and Waste and graduated from a medical school in 1879. He was a member of the Wabasha County Medical Society and died in November, 1881.

James P. Davis was born in England in 1843. At eighteen years of age he entered military service in the Civil War. He graduated from the Missouri Medical College in 1875 and came to Wabasha County the same year. He located first at Kellogg and later at Hammond and at Millville. He died in 1909.

A. C. Dockstader (Lake City) homeopath, 1896-1900. Moved to Hastings. (See Dakota County.)

F. A. Drake, of Lanesboro, in 1898, came to Wabasha where he was at first associated with W. H. Lincoln. He was a graduate of the University of Minnesota.

C. P. Fisher practiced in Wabasha in 1861. He had previously lived in Winona. His professional card read, "C. P. Fisher, M.D., German Physician, Surgeon and Accoucheur."

Lew H. Garrard came to Lake City in 1870 and was twice elected mayor of the town. He apparently devoted very little time to practicing. (See Goodhue County.) His death occurred at Chatauqua Lake, New York, in 1887.

Chauncey Gibbs came from Ohio in 1856 to renew his health. He was one of the seven to lay out the village of Centerville which was later to become Plainview. He did not intend to practice medicine but soon found himself doing so. He died a few years later.

S. Gould came to Mazeppa and moved to Olmsted County in 1882.

Royal A. Gove was elected to the Wabasha County Medical Society in 1882 and served as secretary and treasurer for several years. He practiced for a short while in Wabasha, then moved to Millville, where he remained until 1890, when he went to Tacoma, Washington.

G. W. Greene, an eclectic physician, ran a store and practiced in Lake City throughout the sixties. In 1870 he moved to California, but later returned to Minnesota and was for a short time in Goodhue County. He died in the early eighties.

H. M. Hamlin practiced in Minneiska in 1878 and served as a county physician.

A. L. Holmberg, a graduate of the College of Physicians and Surgeons in Chicago, assisted W. H. Lincoln of Wabasha in his practice in 1899.

Alfred W. Hombogen is listed in Polk's directory for 1890 as practicing at Reeds Landing. He was later connected with an eye and ear infirmary in Chicago.

David W. Horning graduated from the Homeopathic Medical College of Chicago in 1883. He practiced in Lake City until 1891 when he moved to Minneapolis. He was a member of the Minnesota State Homeopathic Society, of which he served as secretary.

S. P. Jones was an eclectic physician who came to Weaver in 1878, and practiced there for many years.

John Kelly settled in Goodhue County in 1853 and later retired to Lake City, Wabasha County, where he died in 1892, being ninety-one years of age at the time. (See Goodhue County.)

P. N. Kelly came to Wabasha to practice about 1891. He was a member of the county medical society, serving as secretary from 1892 to 1894, and as vice president in 1900. He also served as county coroner, and as a member of the pension board. He died in 1903.

Richard Lampe, said to be a graduate of the University of Göttingen, was mentioned in early records, but no information about him is available.

B. F. La Rue graduated from Rush Medical College in 1870 and located in Lake City that year. He was elected to the county medical society, serving as secretary from 1870 to 1872, and to the state society (1872). He ran a drug store at Reeds Landing and moved in 1879 to Appleton, Swift County.

L. M. J. Leonard practiced in Lake City in 1876. He had previously practiced in Hastings.

Ferdinand Lessing, of Wabasha, served in the Civil War as a hospital steward. He graduated from the University of Pennsylvania and began to practice in Wabasha in 1870. He was elected to the county medical society in 1870 and the state society in 1871. In 1875 he moved to Winona. (See Winona County).

William H. Lincoln, the son of W. L. Lincoln, was born in 1857. He was graduated from Rush Medical College in 1882, and located in Wabasha to practice in 1887. He specialized in surgery and later established branch offices at Lake City, and at Mondovi, Wisconsin. Dr. Lincoln was a member of the Wabasha County Medical Society (1888), a member of the pension board (1889), and of the state medical association. In 1888 he was elected mayor of Wabasha. In 1895 he opened, in Wabasha, the Lincoln Hospital, a modern institution which was especially equipped for the treatment of surgical cases. Dr. Lincoln died in 1916.

William L. Lincoln was born in West Townsend, Massachusetts, in 1824 and graduated from Harvard in 1850. He practiced for two years at Winchester, Massachusetts, and was a member of the state medical society there.

He also was the assistant physician at the Insane Asylum of Fulton, Missouri, for about a year and a half. In the summer of 1857 he located in Wabasha where he remained, with the exception of the period of his service as surgeon of the Seventh Minnesota Regiment of Volunteers during the Civil War and a temporary stay in Ottawa in 1873. He served on the Wabasha city school board and was active in local Republican politics. He became affiliated with the Wabasha County Medical Society (1872) and the Minnesota State Medical Association (1870), serving as president of the latter in 1883-84. He was a trustee of the Minnesota Hospital for the Insane at St. Peter and was in charge of the asylum in 1879, during the absence of the resident physician. In 1879, in a farmhouse in the country, Doctor Lincoln, assisted by F. W. Van Dyke, performed the first laparotomy in the county and one of the first in the state. The case was one of intestinal obstruction due to a loop of the intestine being caught in a hole in the mesentery. The operation was successful. Doctor Lincoln died in 1889.

William Lindenburg, a German physician, came to Wabasha in 1862 from Winona and stayed about two years. He received his medical training at the Universities of Göttingen and Hanover.

W. D. Little came to Mazeppa in 1881, in the midst of a diphtheria epidemic. In 1883 he attended the College of Physicians and Surgeons in Baltimore and was licensed by examination the following year. In 1890 he served as a county physician. About this time, he moved from Mazeppa to Zumbro Falls.

Ostrom Steven Lont was the first physician in Mazeppa, where he settled in 1856. He was not a graduate of any medical school, and he admitted he was not much of a surgeon; but by his genial temperament and a conservative practice, he won many friends; and his buggy and pill box were familiar objects to the people of the vicinity. During the seventies, he ran a drug store. In 1880, he served as president of the Wabasha County Medical Society. After many years in Mazeppa, he moved to Long Beach, California, where he died in the early nineties.

Quincy A. Low graduated from Long Island College Hospital in 1873 and settled at Wabasha the next year. He was elected to the county medical society in 1874 and the state society in 1877, and served as a member of the pension board in the early 1890's. He remained in Wabasha until about 1900, when he moved to a farm near Crookston.

——McThurston came to Wabasha about 1852 from Ireland. He was the first to announce himself as a physician; however, his stay was short and his qualifications remain unknown.

Newton McVey graduated from the Medical College of Ohio in 1875 and came to Wabasha. In 1875 he was elected to the county medical society and in 1876 to the state medical association. He remained in Wabasha for a number of years, later going to Kansas City.

(To be continued in the December issue)

President's Letter

COMPLETING THE SURVEY

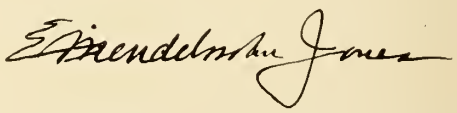
When medical officers come home from this war, specific information is going to be ready for them on nearly everything they need to know to establish or re-establish themselves in the practice of medicine. Gathering such information is part of the work now going forward under the Committee on Postwar Medical Service of the Minnesota State Medical Association and of a like committee of the American Medical Association.

In Minnesota, we have the distinction of being one of the first associations of the country to embark on such a survey. Our survey, however, is broader in outline than many studies now being conducted. It has a double objective, each part of which complements the other. While our medical officers are being asked by questionnaire what their plans for the future are, county medical advisory committees all over the state are being asked to make comprehensive surveys of services and opportunities in their own counties and also to provide their opinions, based upon factual studies, as to the adequacy of their facilities now and for the future.

The survey is not yet complete though 700 of the 1,000 questioned in the military services have already returned their questionnaires—a remarkable response.

About fifty of the eighty-four county medical advisory committees in the rural counties of the state have completed their county studies. Out of these completed studies have come some important information on future needs which will be used by the committee and the association as the basis for their program of improvements and extensions in health services after the war. Obviously these studies must be complete for the entire state in order to be valuable; and the other thirty-four committees whose returns are still missing must be urged to complete their work as soon as possible.

The importance of this study to the future of our public relations as a medical organization should be manifest to every member. The ability and inclination of organized medicine to assume leadership needed for the solution of the economic problems of medical practice has been challenged on every side. This survey will make it possible for us to demonstrate the public conscience and capacity of our medical organization to take the initiative in securing the best possible health and medical service for the people of Minnesota.



President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

FEWER DEATHS FROM APPENDICITIS

THERE is no more treacherous disease than appendicitis. By the same token, there are few conditions more difficult to diagnose accurately. Every general practitioner can attest these statements from his own experience.

The rapidity with which an appendicitis can progress to rupture and peritonitis, thereby complicating the operative treatment, places the attending physician on his mettle when confronted with a suspected case. The most significant symptom of appendicitis is the persistence of tenderness over the appendix. Pain is doubtless the next most important symptom, and the two symptoms are more important than elevation of temperature and leukocytosis, which should be considered as confirmatory when present.

Although appendicitis became a clinical entity before the turn of the century, the mortality from appendicitis showed little decline until recently, much to the disappointment of the profession. It is, therefore, a matter of considerable satisfaction to learn from a recent analysis of statistics presented by the Metropolitan Life Insurance Company,* that the mortality from appendicitis has markedly declined during the past fifteen years. The death rate among this company's policy holders fell from 14.4 per 100,000 in 1929 to 5.2 in 1943, a decline of nearly two-thirds. Most of this decline was achieved in the last four years. The decline was less in children under five and in adults over forty-four, and the reason given for this is that in these age periods, intestinal disturbances are more frequent, and appendicitis is more likely to be overlooked.

The incidence of appendicitis is probably on the increase, which makes the reduction in mortality the more satisfying. The reasons for the improvement, according to the analysis, are due to two main factors: the earlier diagnosis and operative treatment of the disease and the education of the public to the danger of laxatives in suspected cases. So well has the laity been educated as to symptoms of appendicitis that frequently they themselves make the diagnosis and call the physician early. This enables the surgeon to operate early before complications arise. Statistics show conclusively that the administration of cathartics add to the mortality from the disease. Doubtless, chemotherapy has reduced the mortality markedly in cases complicated by peritonitis.

There is no better example of the value of education of the public in matters pertaining to health than in this reduction in the mortality from appendicitis.

*Statistical Bulletin, Metropolitan Life Insurance Company, 25:1, March, 1944.

PREPAYMENT OF MEDICAL INSURANCE

THE rapid expansion of prepayment insurance plans to provide for unusual medical costs is not generally appreciated. These costs usually include hospital care and frequently surgical operations, and this is the field in which expansion of medical insurance has for the most part, taken place.

Employers have more and more come to realize the desirability even from a financial standpoint of providing at least in part for such insurance. In the adjustment of industry after the war, there will be need for co-operation between employer and employe in order to avoid chaos, and one way in which both parties can and doubtless will co-operate is in the expansion of medical insurance.

The recent growth of the Blue Cross Hospital Insurance Organization throughout the country has been outstanding. It provides, at low cost, insurance against the need for hospitalization, and at present, protects about 15,000,000 individuals. The cost has been kept low because it is nonprofit in nature, insures individuals in groups and eliminates to a large degree the costs of selling policies. Membership is about equally divided between employes and their families. Additional policyholders are being added at the rate of about 50,000 a week. The plan has been instrumental in taking many hospitals out of "the red" and has maintained many individuals in the role of private patients.

The Blue Cross Organization is not the only one providing hospital insurance. Some of the larger insurance companies like the Equitable, Metropolitan, Prudential, Travelers, and the Aetna provide hospital insurance for about 15,000,000 more, for the most part through group policies.

The establishment of prepayment medical insurance has not been limited to provision for hospital care. Some of the policies issued by the large insurance companies provide for medical costs, particularly for surgery and obstetrics. Just as the hospitals developed an organization for providing insurance against hospital bills, by 1941, some twenty medical societies had taken steps to organize prepayment programs. Today about sixteen medical societies provide for a million policyholders. Michigan, California, New Jersey, Pennsylvania, Massachusetts, and Colorado all have statewide organizations, some known as the Blue Shield.

Michigan is a good example. An organization known as the Michigan Medical Service was founded in 1940 by the Michigan State Medical Society as an independent organization backed by the medical services of the enrolled members of the State Society in lieu of insurance capital. Possible losses were provided for by a pro rata reduction in medical fees, and there were losses at first. This was found to be due to insuring nonsurgical risks. These policies, besides constituting a loss, were found to be much less popular and were subsequently abandoned. The Michigan Medical Service has a growing membership of 630,000 and is now financially sound. It insures the same groups as the Michigan Hospital Service and uses the same office staff for collections but remains a separate organization. The low overhead enables the organization to provide medical insurance for $1.60 a month for man and wife, and $2.25 a month for a family.

The Academy of Medicine of Cincinnati has just endorsed a plan by which a mutual insurance company, in co-operation with the Blue Cross Plan of Ohio, will undertake to provide surgical and obstetrical service for members of the Blue Cross Plan. The United Medical Service, Incorporated, of New York, providing medical insurance limited to obstetrics and surgery with physicians' fees based on the workmen's compensation schedule is at present insuring 56,000 individuals and is affiliated through the organization of the Associated Hospital Service of New York.

Thus a good start has been made in providing medical insurance in addition to hospital insurance for families with moderate income. Other states will doubtless follow with state-wide organizations similar to those already proven financially sound, and there is every reason to believe that additional insurance companies will offer policies similar to those now obtainable. While, so far, most medical and hospital insurance policies are written for groups of employes, it is highly desirable that they be available for individuals at low cost. The expansion of voluntary medical and hospital insurance plans on a broad scale by insurance companies, as well as nonprofit organizations sponsored by state medical associations, should obviate any need of compulsory government insurance.

DIET DEFICIENCIES

Swiss physicians report that diet deficiencies in France in calories, protein, minerals and vitamins are producing deficiency diseases, delaying growth, and greatly lowering resistance to acute and chronic infections in French children. Tuberculosis, rickets, scurvy and dermatitis are rapidly increasing, and living conditions as well as hunger are having a serious effect on delinquency and on the mental and social attitudes of children. In some countries there are reports of alarming increases in vision and hearing defects. In all these countries hunger is combined with suffering from cold, due to lack of fuel for homes and to lack of clothing and shoes.—Martha Koehn, Ph.D., *Ohio State Medical Journal*, September, 1944.

SOME RECENT ACTIVITIES OF THE AMERICAN MEDICAL ASSOCIATION

(Continued from Page 915)

exists for utilizing this situation to get better distribution of physicians throughout the nation.

The Board of Trustees of the American Medical Association has already indicated that it will be willing to establish an agency in the headquarters office for the specific purpose of aiding men who have given their services to the nation in the armed forces. This action is far-sighted, as have been many other activities carried on in recent years under the direction of the Board of Trustees.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

PREPARE FOR LARGER RESPONSIBILITIES, APHA SAYS

The strategy of backers of the Wagner-Murray-Dingell Bill is now unfolding. The latest step is the adoption by the governing council of the American Public Health Association of recommendations for a compulsory sickness insurance program which faithfully reflects the provisions of the bill without naming it.

It is clear that the action taken by the governing council, in the name of the association, did not reflect the opinion of the membership. It was the opinion, rather, of a small, closed group, as noted in a recent editorial in *The Journal of the American Medical Association*. Members of the governing council are not elected by the general membership of the American Public Health Association. For the most part, as the editorial pointed out, they are "men long committed to federal compulsory sickness insurance and to federal control in all matters in the health fields."

Lead Opposition

Physicians in Minnesota will be interested to know that Dr. Haven Emerson, acting head of the Department of Public Health of the University of Minnesota and an outstanding authority in public health, led the opposition to the action taken by the American Public Health Association's council.

Dr. Emerson has long been a member of the association and is chairman of a committee which is now making recommendations for extension of organized public health units in the United States. He is known to favor establishment of prepayment plans to cover costs of medical service, but solely on a voluntary basis and under medical sponsorship. For the extension of public health units he firmly advocates financing by counties and states instead of the federal government. It is safe to say that the view of Dr. Emerson, rather than of the governing council, reflects the opinion of the majority of state health officers and others who make up the rank and file of the membership.

At the same time, the action of the council is timed well for purposes of getting legislation through the Congress and it will undoubtedly be used by proponents of the Wagner-Murray-Dingell Bill as proof that enlightened public opinion is with them.

Briefly, the program adopted by the council of the American Public Health Association recommends the following:

1. That a national plan be adopted aiming to provide comprehensive medical and health services for all the people in all areas of the country.

2. That these services be adequately and securely financed through social insurance, supplemented by general taxation, or through general taxation alone.

3. That public health agencies, federal, state and local, should carry the major responsibility for administering health services in the future and that public health officials should begin training their staffs and themselves, now, to discharge these larger responsibilities.

4. That, preceding or accompanying the development of the plan to finance and administer medical and health services, a program should be developed for construction of needed hospitals, health centers and related facilities, with federal aid to the states on a matching basis, the U. S. Public Health Service to administer the construction program at the federal level, in co-operation with the federal agencies responsible for health services and construction.

5. That the health agency authorized to administer the over-all program should have the advice and counsel of a body representing the pro-

fessions, other sources of services and the recipients of the services.

6. That provision be made for postgraduate training of professional and administrative personnel. As a corollary, state health departments are urged to utilize training funds now available to train personnel in techniques of administration of health and medical services and for hospital and health center administrators and nursing supervisors.

Health Plan is Rich Prize

Obviously, the governing council of the American Public Health Association regards a national plan of the scope outlined as a rich prize for the administrative agency lucky enough to fall heir to it. The council relishes the prospect of snaring the prize for the public health service and the state agencies from among which its membership is recruited. It is urgent in its exhortation to public health officials to be prepared.

"Preparation should be undertaken now," says the council in these recommendations," because, when the public comes to consider where administrative responsibilities shall be lodged, it will be influenced in large measure by the readiness for such duties displayed by public health officers and by the initiative they have taken in fitting themselves for the task."

MORE MEDICAL SERVICE PLANS

There is no doubt of the widespread interest among medical organizations in new methods of distributing costs of medical service. Scarcely a medical journal or a county bulletin gets into print these days, which does not have a report on prepaid medical service plans, either in operation, or on the way, or under consideration.

A few of these plans offer complete medical service; but most of them are limited, for the present at least, to surgical, or medical and surgical, services in the hospital. Most of them are on a service basis; but a few are like the plan just launched by the Toledo Academy of Medicine which is on an indemnity basis with financial backing from an insurance company.

In New York state, two medically sponsored plans which have been coasting along with indifferent support from the physicians as well as the public, have been spurred by Mayor La Guardia's plan for New York City employes, to combine for an active promotion campaign. Incidentally, the Mayor's plan is now making application for its charter of operation. As submitted to Albany, the plan is reported to call for a panel, instead of for free choice of physician. The income limit is said to remain at $5,000 for each subscribing family, in spite of opposition to both provisions by New York medical societies.

Human Trait

The fact is, that there is increasing public interest, also, in new plans for distributing costs of service. The poll of the National Physicians' Committee, among others, has shown that a large percentage of the people of the United States would favor an insurance plan for medicine. What these people have been reading in popular magazines since that poll was made, last year, and what they are hearing over the air is leading them to look for the development of more insurance plans and to take it for granted that such mechanisms will be set up soon everywhere, either on a voluntary basis under medical sponsorship or, failing that, by an act of Congress under the social security program. It should never be forgotten, in that connection, that it is a common human trait for people to approve many things in theory which they will not go out on their own initiative and secure for themselves. Thus, a vigorous selling campaign is always necessary to enlist subscriptions even from the people who vote in favor of voluntary medical insurance plans in the polls.

"What the People Want"

It should be kept in mind, too, that the common man in the street is already conditioned to the idea of government benefits of many kinds. He cannot be counted upon to differentiate much between the relative soundness of old age benefits, as opposed to medical benefits, under social security. And apparently he would like both. If he is already enrolled in a hospital insurance plan, he will probably be glad to get his medical benefits in the same way. It will not be too difficult, either, to interest him in the advantages of freedom from red tape and in the personal liberty of choice with a high type of service which go with voluntary plans, even if he has had no experience with hospital plans.

But if no voluntary plan is offered, it is not likely that he will reject the idea of benefits pro-

vided by the government on the score of anything so remote from his comprehension as the danger to standards of medical practice. He firmly believes that America is a land of miracles and he will confidently expect American ingenuity to provide both the benefits and the type of service he wants.

As Mr. John R. Little told California physicians in a report reprinted in these columns last month: "What the people want they usually get. If they want health insurance by act of Congress, they will get it. And the only real protection is to sponsor and set in motion better plans and sounder instrumentalities to satisfy that want."

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. Du Bois, M.D., Secretary

Duluth Woman Sentenced to Two-and-One-Half-Year Term on Narcotic Charge

Re State of Minnesota vs. Dorothy M. Johnson, also known as Mrs. Henry Johnson

On September 18, 1944, Mrs. Dorothy M. Johnson, thirty-nine years of age, 1005 E. Superior Street, Duluth, was sentenced to a term of two and one-half years in the Women's Reformatory at Shakopee, following her plea of guilty to an information charging her with the crime of obtaining narcotic drugs by false and fraudulent means.

At the request of the Minnesota State Board of Medical Examiners the Federal Bureau of Narcotics investigated the activities of this defendant resulting in her arrest on September 15, 1944. The defendant has two previous convictions for similar offenses, the first one being on May 7, 1943, when the defendant pleaded guilty in the District Court of St. Louis County, and was sentenced to a term of one year in the Women's Reformatory at Shakopee. The sentence was suspended on condition that the defendant take treatment for drug addiction at the Willmar State Hospital. On December 8, 1943, Mrs. Johnson pleaded guilty, in the United States District Court at Duluth, to a conspiracy charge under the Harrison Narcotic Act. Sentence was deferred until June 12, 1944, during which time the defendant was at the Willmar State Hospital. On June 12, the defendant was placed on probation for five years. However, Mrs. Johnson soon reverted to the use of morphine, resulting in her arrest on September 15, in the present case. At the time of the last arrest, Mrs. Johnson was using the name of Murphy to obtain prescriptions from Duluth physicians for morphine.

* * *

Minneapolis Man Sentenced To One Year Workhouse Term for Violation of Basic Science Law

Re State of Minnesota vs. Elmer C. Hultgren

On October 17, 1944, Elmer C. Hultgren, thirty-six years of age, 1800 Park Avenue, Minneapolis, was sentenced to a term of one year in the Minneapolis Workhouse by the Hon. Vince A. Day, Judge of the District Court, following the defendant's plea of guilty to an information charging him with the crime of practicing healing without a Basic Science Certificate. Hultgren was arrested on September 16, following his attempt to perform an abortion on an unmarried woman at the defendant's apartment for which he received a sum of $20.00. The woman became ill and was hospitalized.

Hultgren stated that he was born in Chicago, Illinois, but had lived in Minneapolis several years. He admitted that he had no medical education of any kind. He stated that three or four years ago he attempted to perform an abortion on another woman and that these two cases were the only ones in which he was ever involved.

* * *

Minneapolis Masseur Pleads Guilty to Practicing Without License

Re State of Minnesota vs. Clarence E. Evansen

On September 11, 1944, Clarence E. Evansen, forty-four years of age, 2012 Park Avenue, Minneapolis, entered a plea of guilty in the District Court of Hennepin County to an information charging him with the crime of practicing massage without a license. Judge Vince A. Day ordered the defendant to submit to a mental examination and on October 5, 1944, sentenced the defendant to pay a fine of $50.00 or serve three months in the Minneapolis Workhouse. On October 7, the defendant paid the fine.

Evansen, an employe of the Minneapolis Honeywell Company, was arrested at the same time Gertrude Smith, 608 Nicollet Avenue, Minneapolis, was arrested on a similar charge, and who pleaded guilty on August 19, 1944. Evansen admitted that he had no training in massage but became interested in it through the taking of massage treatments himself. He advertised in one of the Minneapolis papers for girls to give massage treatments and the matter was reported to the Minneapolis Police Department. The investigation resulted in the arrest of both Evansen and Mrs. Smith when it was discovered that Evansen had a key to the massage parlor operated by Mrs. Smith.

IMMUNIZATION VIRTUALLY ELIMINATES TETANUS IN ARMED FORCES

Tetanus has been virtually eliminated from our armed forces as a result of compulsory immunization, Major General Norman T. Kirk, USA, Surgeon General of the Army, says that not a single case has been reported among completely vaccinated troops and there has been only a handful of cases throughout the entire Army. These occurred prior to vaccination or before the immunization process had been completed. The Navy, which also requires tetanus immunization process, has had no cases of the disease among sailors or Marines wounded in combat up to September 15, 1944, according to the Navy Bureau of Medicine and Surgery.

The most recent account illustrating the value of tetanus immunization was given in the report of a Navy medical officer who served aboard a hospital ship on which 284 Japanese and 384 Americans, all wounded in the same engagement, were being treated. Fourteen cases of tetanus, ten of which were fatal, occurred among the Japanese. None of the Americans developed the disease. Army medical records indicate that the Japanese do not immunize actively against tetanus.—Office of Surgeon General, News Release, October 16, 1944.

Minneapolis Surgical Society

Meeting of May 4, 1944

The President, H. O. McPheeters, M.D., in the Chair

CONGENITAL VARIATIONS OF THE EXTRA-HEPATIC BILIARY TRACT

A Review

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In presenting a review of developmental anomalies of the biliary tract it occurred to the writer that these might be classified on an embryologic basis in terms of the following processes: (1) faulty resolution of the solid epithelial stage of the biliary tract; (2) emergence of bilaterality or of dichotomy; (3) disproportionate growth of embryonic parts; (4) persistence of parts that usually disappear; and (5) heterotopic growth.

In the first category might be placed *agenesis* of the gall bladder and of the duct system, together with the types known as *bilocular gall bladder* and *septate ductus choledochus*. At first hollow, the embryonic gall bladder, cystic duct and common ducts soon become solid epithelial structures by the migration of parietal cells of the tube into the lumen.[2] After a short but varying period the solid core becomes vacuolized and the lumen is re-established. If this fails to occur it is thought that the epithelial organ is resorbed. If a double row of vacuoles appears, and persists, a septate or bilocular organ results.[3]

In the second category belongs the *vesica divisa* or bilobed gall bladder. At the time that the pars cystica of the hepatic diverticulum appears it sometimes arises directly as a bilobed organ, with right and left lobes lying immediately above the right and left lobes of the ventral pancreas.[1,2] This is probably to be considered as an expression of bilaterality. In some cat embryos one or both lobes become further subdivided to form a *trilobed* or *quadruplicate gall bladder*. In man, the vesica divisa is much rarer than the double gall bladder.

The third category contains by far the largest range of anomalies. Disproportionate growth of the epithelial gall bladder within its slower growing connective tissue fossa, produces many kinked and bizarre shapes and such fixed forms as *the folded fundus* ("phrygian cap").[4] It is the commonest major anomaly of the human biliary tract (2 to 4 per cent). Not many years have passed since German clinicians were advocating its removal to alleviate obscure gall bladder symptoms. Here also belongs the more striking types of *double common bile duct*, to be explained by aberrant growth of the transitional zone between the foregut and midgut, whereby in very early embryonic stages the hepatic diverticulum becomes separated into two portions, one half being left to empty in or near the stomach and the other half being pushed down with the duodenum.[4] Finally, disproportionate growth also explains the complete *involution of the ampulla of Vater* which occurs in about 30 per cent of individuals.[5,6] In early stages, bile and pancreatic ducts join outside the intestinal wall. Consequently the ampulla is coextensive with the whole of the oblique passage through the wall. As development proceeds, the connective tissue wedge between the ducts cleaves deeper and deeper until in many instances it reaches the tip of the papilla, thus causing bile and pancreatic ducts to empty separately.

Persistence of passages or structures that usually disappear in the course of development, causes still other anomalies. Thus the ampulla of Vater soon after it is formed (hepato-pancreatic duct) acquires *two intestinal orifices*. This is due to the fact that following the stage when the lumen of the duodenum is plugged by an ingrowth of epithelial cells (15 mm. embryo) two channels of coalescing vacuoles appear and the ampulla establishes communication with each.[5] Subsequently the lower orifice disappears but in about 1 per cent of individuals two openings remain. Again, about the same stage a chamber normally develops at the junction of the common hepatic, bile and cystic ducts which has been named the hepatic antrum.[2] In the pig embryo it is very large. In the normal course of events it participates in the formation of the junctional portions of these three ducts. But should its resolution be delayed and it remain as a large chamber placed athwart the outlet of the cystic and hepatic ducts, it might well provide the initial stage in the development of an *idiopathic cyst of the common bile duct*.

The last category, heterotopic growths, comprises such anomalies as the accessory gall bladder, the pancreatic bladder, accessory hepatic and cyst-hepatic ducts, and accessory pancreatic nodules of the gall bladder. In several species of mammalian embryos accessory gall bladders may be stimulated to arise where ducts or hepatic cords come into contact with invading connecting tissue. Accessory gall bladders[2] may thus bud from (1) the cystic, hepatic and common ducts (the *ductular gall bladder* of man and other mammals), (2) from the neck of the gall bladder in association with cyst-hepatic ducts (the *diverticular bladder* of cattle and pigs), (3) from trabeculae bordering the fossa vesicae felleae (the *trabecular gall bladder* of cattle, sheep and cats) and (4) from portal diverticula of the left ventral pancreas (the *pancreatic bladder* of cats.)[1] In man the corresponding lobe instead of growing into the porta hepatis may grow around the left side of the duodenum to form an *annular pancreas*. Similarly, liver cords near portal canals may develop into *accessory hepatic ducts;* those bordering the fossa of the gall bladder may become the *"vasa aberrentia"* (and the epithelial-lined cysts) sometimes found in the adventitia of the human

gall bladder; and the neck of the vesicle may give rise to cords which differentiate into *cyst-hepatic ducts.* Finally, *multiple outgrowths of pancreatic tissue* may appear in the wall of the human gall bladder in the form of an aggregate nodule which in external appearance simulates an appended lymph node.[7]

In conclusion it should be pointed out that under the compulsion of brevity mention of other theories that have been advanced to explain some of these anomalies has had to be omitted as well as the fact that more than one process may be involved in the production of a single malformation. Nor has it been within the province of this review to discuss the fundamental causes of aberration. Nevertheless it is apparent that variations of the biliary tract may be readily grouped into several developmental patterns.

References

1. Anat. Rec., '25, 36:151-184.
2. Anat. Rec., '26, 38:177-232.
3. Anat. Rec., '32, 55:71-94.
4. Am. Jour. Roent. '35, 33:589-602.
5. Anat. Rec., '37, 67:441-468.
6. Anat. Rec., '37, 68:17-42.
7. Anat. Rec., '40, 77:319-329.

COMPLICATING FACTORS IN SURGICAL DISEASES OF THE BILIARY TRACT

Report of Cases

WILLIAM A. HANSON, M.D., and L. H. FOWLER, M.D.*
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Case 1.—W. D., a white man, aged fifty-eight, was admitted to the hospital April 9, 1936. He had had multiple attacks of gall-bladder colic with diagnosis of large biliary calculi present in the gall bladder and was advised to have a cholecystectomy. The present attack began five days previous to admission to the hospital, for which he took his "usual home remedies." He complained of considerable generalized abdominal pain of continuous character which was most marked in the right upper abdomen. His pulse on admission was 100 per minute, temperature 99.4, respirations twenty per minute and his blood pressure registered 122 systolic and 70 diastolic in mm. of mercury. The abdomen showed a marked distention with tenderness in the right upper quadrant and slight rebound tenderness was present. There were no visible peristalsis present and no borborygmus heard. A diagnosis of rupture of the gall bladder was made and intestinal obstruction which was confirmed by roentgenograms. Inasmuch as he was not seen until five days after his acute episode with complications, conservative treatment was instituted, consisting of nasal suction, small doses of dilaudid to minimize the pain, external heat to the abdomen, etc. His general condition remained about the same until April 17, when he had a rather large defecation, noting that he passed a large mass which proved to be the large calculus shown here, and during the next twelve hours he passed a second calculus. Following this his distention, pain, et cetera, disappeared with general improvement, so that he left the hospital the twelfth day following his admission.

Subsequent examinations showed a small gall bladder but no definite evidence of communication between the gall bladder and the transverse colon which was thought to be the site of perforation from the gall bladder, and he had no complaints. This case I believe is of interest due to the size of the two large biliary calculi which measured 5 x 12 cm.

*Colonel L. H. Fowler is now with Base Hospital 26.

Case 2.—F. L., a white man, aged fifty-six, was admitted to the hospital October 22, 1943. His past history revealed a previous operation for right indirect strangulated inguinal hernia.

He had complained of several attacks of right lower quadrant pain associated with some nausea and vomiting and constipation. X-ray examination with barium enema revealed a calcified body with a non-calcified center posterior to the cecum.

On October 27, 1943, under spinal and cyclopropaine anesthesia the abdomen was explored. The cecum and ascending colon were found densely adherent, but the appendix was not found; therefore the cecum and ascending colon were mobilized, and the appendix was found retrocecal containing a mass. The appendix extended upward making a semi-circle with the mass in its center. After considerable difficulty the appendix containing three calculi, the largest 1.2 x 1 cm., and the smallest .5 in diameter was removed. These we thought were biliary calculi which had passed down into the appendix with subsequent rupture of the appendix. Due to the large size of the stones the posterior cecum and ascending colon were investigated, but no evidences of rupture could be ascertained. Three grams of sulfathiazole and two drams were placed in the posterior cecal space and the abdomen was closed in layers.

The pathological diagnosis was "a subsiding perforated appendicitis with gallstones." His convalescence was normal for two days when he developed a respiratory complication due to a complete atelectasis of the right lung which responded to bronchoscopy and aspiration of foreign material, with recovery in three days. He was dismissed from the hospital on the fourteenth day postoperatively, feeling well. Subsequent x-ray studies showed no evidence of fistulas, communications between the duodenum and the gall bladder and no air or barium in the gall bladder or bile ducts.

Comment.—In this case the gallstones probably perforated from the gall bladder into the intestinal tract rather than traversing the biliary ducts into the duodenum and passed into the appendix causing perforation.

Case 3.—Miss H. L. H., white, entered the hospital January 11, 1943, because of severe epigastric pain which had been present for three days. Later she developed right upper quadrant pain which varied in intensity and several attacks of vomiting. Her previous history was negative except for appendectomy in 1938.

Physical examination revealed the following information:

Her weight was 150 pounds, and she was 5 feet 5 inches in height. Her blood pressure was 130 systolic and 74 diastolic in mm. of mercury. Her temperature registered 99.4, pulse 84 and respirations 18 per minute. The skin and the sclera showed a slight yellowish tinge. Her general examination was essentially negative except for a marked tenderness in the right upper quadrant with some muscular spasm. A presumptive diagnosis of catarrhal jaundice was made.

The urine showed no bilirubin but a strong trace of urobilinogen was present. The blood examination revealed a hemoglobin of 11.79 mg., white blood count 4,700, normal differential and red blood count. The bleeding time was 5 minutes, 50 seconds; the clotting time 7 minutes. The stool examination was negative. The serum bilirubin was 4 mg. January 20 the blood examination showed many monocytes with "pmns old and toxic."

January 14, 1943, a cholecystogram showed a poorly-functioning gall bladder, probably with stones.

January 20, 1943, "blood smear showed toxic changes and blood findings not compatible with infectious mononucleosis."

The treatment consisted of intravenous glucose in normal saline, bile salts, hot packs, sedation as needed, proklot tablets and 4 small transfusions.

On February 21, 1943, exploratory operation was advised, and she was operated February 24, 1943: a right upper rectus incision under spinal anesthesia. The gall bladder was slightly thickened and showed slight delay in contraction on palpation but no other lesion was found; therefore cholecsytectomy was performed. On dissecting out the cystic duct a moderate-sized vessel running from the left to the right was found over the common and cystic duct which at first was thought to be the cystic artery, but was later identified as the right hepatic artery in an anomalous position. On further dissection the cystic artery was identified and appeared short and posterior to the cystic duct. Following this the usual dissection was carried out to remove the gall bladder preserving the anomalous right hepatic artery.

No other abnormality being encountered the abdomen was closed in the usual manner by layers. Her convalescence was normal, and she was discharged from the hospital on the twelfth postoperative day. The pathological report revealed "an acute cholecystitis but no biliary calculi." Since her operation she has had no further difficulties.

Summary

Three cases with complications involving the gall bladder have been presented. In the first gallstones perforated into the colon and were passed. In the second case a gallstone most likely perforated into the small or large intestine although it may have traversed the common duct and becoming lodged in the appendix, perforated. In the third case, an anomalous right hepatic artery was found which constricted the common and cystic ducts. From the slides here presented and from Dr. Boyden's presentation one will, I believe, be impressed with the possible complications and anomalies in the biliary tree and its vascular supply which may exist.

Discussion

Dr. O. W. Yoerg: My patient, to whom Dr. Hanson referred, had an unusual condition, in which a large, misplaced or anomalous artery lay in front of the cystic duct. I was unable to identify its origin.

I started to remove the gall bladder from below upwards, but finally removed it from above downward. No difficulty was encountered and the patient made an uneventful recovery.

GANGRENE OF THE FOOT FOLLOWING CARBON MONOXIDE POISONING

Report of Case

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The case herein reported is of interest: (1) because the complication which developed is rare following carbon monoxide poisoning; (2), because of the question it poses relative to its compensability under the state law; and (3), because anti-coagulants which we now have might have more favorably influenced its course.

There are many complications of carbon monoxide poisoning which are well known, especially those that occur in the nervous system. Gangrene, involving the foot or feet, is a complication which is extremely rare.

In searching the literature back to 1907, four cases were found, one of them being in the German literature. Shillito, et al.; made a study of 21,143 cases of gas poisoning in New York City. Of 14,572 who recovered, they found forty-three showing nervous and mental changes. They did not record any which developed vascular damage and gangrene. Consolidation in the right lung a few days after exposure, accompanied by fever, according to Drinker and Cannon, is a common complication.

The method by which it produces its poisoning effect is by forming with the hemoglobin a compound which is more stable than oxyhemoglobin. The affinity of carbon monoxide for hemoglobin being two hundred times greater than that of oxygen, it causes asphyxia by destroying the power of the blood corpuscles to carry oxygen from the air to the tissues.

The symptoms encountered when a considerable amount of this gas has been inhaled are vomiting, langour, headache, debility, et cetera, leading to deep unconsciousness, with shallow breathing, rapid pulse, cold, clammy skin and, finally, death. With active treatment patients in extreme condition often recover; but on account of the stability of the carbon monoxide hemoglobin, the symptoms often are very persistent. This time is very variable and may last from several days to several weeks, when the condition of the patient again gradually becomes normal. This gradual return to normal is not, however, always uneventful. Nervous symptoms even simulating insanity, cerebral hemorrhages usually occurring in the caudate nucleus and optic thalamus, hemiplegia, nutritive changes in the brain and skin, et cetera, all have been recorded as occurring after carbon monoxide poisoning in persons apparently normal up to the time of the accidental inhalation of the gas.

Angus McLean, M.D., of Detroit, reported in the May issue of the *Journal of the American Medical Association*, 1911, a case of gangrene of both extremities following carbon monoxide poisoning. His was a case of a young man, aged twenty-two. Three weeks after the inhalation of the gas he developed a coldness and a numbness in his distal extremities reaching nearly to the knees. Shortly thereafter, extreme pain appeared in the extremities and a gangrenous area developed in the toes which extended up nearly to the knees. Amputation became necessary, and was done about six weeks following the inhalation of the carbon monoxide. He states that this case demonstrates that the effects of carbon monoxide poisoning are more far reaching than is generally supposed. This also demonstrates that although recovery may be apparently complete, yet after a lapse of a few days, even a few weeks, most startling and irreparable damage to the human organism may become evident as a result of the inhalation of this gas. He expostulates on the various theories as to the etiology of the formation of the gangrene, but leans to the theory that it is oxygen deficiency in the tissues of the distal portions of the body.

A German writer reported a case of gangrene in one foot in a child nine years of age, following the inhalation of carbon monoxide. Amputation was necessary and was done seven weeks following the inhalation of the gas. This author had no theory as to the etiology of the gangrene. This article appeared in June, 1921, in "Deutsche Medizinische Wochenschrift."

Sajous states in his "Cyclopedia of Practical Medicine" that thrombi, sometimes causing gangrene, may be formed under the influence of carbon monoxide.

William C. Carey, writing in *Industrial Medicine* in 1940, reported a case of gangrene of the foot following carbon monoxide poisoning in a man of seventy-two years, and he states that it is his belief that the carbon monoxide had caused an arteritis and thrombosis of the dorsal pedis artery. The following is the microscopic report of Carey's specimen: "Popliteal artery shows a constricted lumen due to new formation of fibrous tissue with patchy deposits of calcium, especially in the media. Similar changes in all arteries down to and including the dorsalis pedis and interosseous show, in addition, lumen almost obliterated by new formation of fibrous tissue, upon which is layered an organized thrombus.

Diagnosis: "Arterial sclerosis with obliterating arteritis and thrombosis of the dorsalis pedis artery."

The case I wish to report is that of a man thirty-eight years old, white, married, a service station operator. He entered Asbury Hospital, November 1, 1942.

Report of Case

Family History.—Of no significance.

Past History.—He had measles, mumps and chicken pox in childhood without complications and an acute catarrhal jaundice at the age of thirteen. In 1916 he had acute appendicitis and was operated upon by Dr. Huxley of Faribault; good recovery without complications. In 1929, without having had any preceding symptoms he had a perforation of a peptic ulcer and underwent an emergency operation. In 1940 Dr. Allison reported that the gastro-intestinal x-ray examination was normal. He eats a general diet, has no digestive symptoms and has normal bowel movements. He has no urinary symptoms and no cough or dyspnea. He has never had scarlet fever, tonsillitis, rheumatic fever, nor chorea.

Present Complaint: On October 26, 1942, the patient worked for some hours exposed to carbon monoxide gas. At that time his extremities became weak and numb. On October 27 the symptoms of weakness and numbness were entirely relieved in the arms, but both legs were weak. On October 28 the left leg was cold, weak and numb. I first saw him on that date, and found evidence of impaired circulation in the left lower extremity, and I also heard a heart murmur. He was hospitalized during the next seven and a half weeks, during which time his temperature ranged from 98.8 to 101.2, his pulse from 70 to 90, and his respiration was normal. On admission the intern recorded a soft, blowing systolic murmur heard over the entire precordium. The urine was normal, the blood Wassermann was negative, and a blood culture proved negative. Dry gangrene, appearing first in the great toe, involved all toes and extended up to the tarso-metatarsal joints, where the line of demarcation developed. On November 6 the hemoglobin was 53 per cent, red blood count 3,640,000, leukocyte count 17,000, polymorphonuclears 76 per cent, lymphocytes 16 per cent, monocytes 5 per cent, eosinophiles 2 per cent, basophiles 1 per cent. On November 27 the blood picture was essentially the same.

An x-ray of the left leg showed a slight degree of arteriosclerosis. The patient complained greatly of pain in the left leg and foot and he required rather frequent injections of dilaudid. On November 10 he was given a transfusion of 500 c.c. of blood.

Upon his arrival at the hospital, the leg was elevated and hot packs up to the knee were continuously applied. In addition, hyperemia was used. The blood pressure cuff was placed above the knee, and at fifteen-minute intervals the pressure was raised to 100 millimeters of mercury and kept there for three minutes. This was continued each day for a week's time, after which it was discontinued.

Drs. C. J. Potthoff, H. O. McPheeters and T. A. Peppard saw this man in consultation, and agreed as to the physical findings and to the etiology of the gangrene; that is, they agreed that it was probably a direct result of the inhalation of the carbon monoxide.

On December 9, 1942, six weeks after the inhalation of the carbon monoxide, the left foot was amputated at the tarso-metatarsal junction. The patient progressively improved and was allowed to leave the hospital December 20, 1942.

Dr. Lofsness made sections of the arteries of the dorsum and plantar portions of the foot. These showed organizing thrombi and Dr. Bell believed that the condition represented one of thrombo-arteritis.

Operative Procedure.—Under general anesthesia the flap outline was drawn just above the gangrenous area, all the way around the foot. The flap then was dissected down all around the gangrenous area and to that was pinned with towel clips the sterile glove covering up the necrotic area. The flaps were dissected back on the plantar surface to a depth of the head of the fifth and head of the first metatarsal. The upper flap was slightly retracted. The bones were then sawed off, leaving the head of the first and head of the fifth metatarsal intact, which will preserve some balance for him. The sharp edges of the bone were removed with a Ronguer forceps. The area was irrigated and 4 grams of sulfathiazole put in the wound, and the wound closed with silkworm and dermal. There was considerable tension on the dorsum of the foot, and it was not possible to get perfect approximation of the flap edges. Condition of the patient was good on leaving the operating room.

This case is interesting from the compensation insurance standpoint. It was difficult to convince the insurance company that his gangrene was secondary to his carbon monoxide poisoning, but they finally decided that it was, and the patient received compensation for the time lost.

I believe the slides I am presenting give evidence of an arteritis. The media of the vessels shown is definitely thickened, approximately twice as thick as normal. It is my opinion that the carbon monoxide poisoning has produced an arteritis with thrombosis similar to that found in Berger's disease.

Discussion

Dr. H. O. McPheeters: I think that if we had known a little more about heparin and dicumerol we would have used them in this case. If we had used sympathetic block we might have prevented some of the gangrene.

Dr. E. A. Regnier: I would like to ask Doctor Cranmer how he reconciles this pathology with monoxide poisoning. I think there are definite arterial changes here. I think it would be logical to assume this man had the same changes to the vessels of the other leg.

Dr. R. R. Cranmer: I think that is a possibility.

Dr. Regnier: You haven't any sections of the veins here, have you?

Dr. Cranmer: No.

Dr. Regnier: This doesn't fit the picture of Berger's disease. There are many conditions in which the pathology would be very similar. His pathology is not different from the ordinary type of arteriosclerosis that you see in senility or in the diabetics who develop diabetic gangrene at this age.

If the insurance company had not paid this man, what proof could you have brought about which would have led to the diagnosis of monoxide poisoning as an etiological factor?

Dr. Charles E. Merkert: I wonder if anyone has heard of gangrene developing following shoe dye poisoning. We saw many of such poisonings a few years ago. In shoe dye poisoning, there is a tremendous production of methemoglobin—much greater, I believe, than is produced by carbon monoxide gas poisoning. I do not recall, however, that gangrene ever developed in any of those cases. I therefore believe that in carbon monoxide poisoning the loss of oxygen-carrying power of the blood produced by the metahemoglobin formation cannot of itself alone be considered to be the cause of the gangrene.

Dr. R. F. McGandy: I would like to ask Doctor Cranmer what he feels is the etiological connection between the carbon monoxide and the unilateral gangrene.

Dr. Cranmer: We perhaps would have had a hard time to prove the carbon monoxide to be an etiological factor. This particular patient did have some arteriosclerosis. We could see it in the x-ray pictures. He possibly had a similar thing on the opposite foot.

Here we have a man who was poisoned and within twenty-four hours developed some symptoms in his foot. We consulted the literature and found some other cases reported.

A specimen was sent in. Doctor Bell reported arteritis. You do not have arteritis in arteriosclerosis. What produced the arteritis? It is reasonable to suppose it was the gas.

Dr. Regnier: Wouldn't you think the cerebral tissues would have suffered?

Dr. Cranmer: We know that most of the symptoms in carbon monoxide poisoning are due to its effect on the brain and spinal cord.

Dr. Regnier: This fellow didn't have any?

Dr. Cranmer: No, except temporary unconsciousness. The German writer did not have any theory as to the etiology of the gangrene. The third man said it was thrombo-arteritis. The findings indicate there was some acute process. It isn't arteriosclerosis. It is an acute or subacute process. These cases reported all developed gangrene in a very short time.

When I saw this man first I put the blood pressure cuff on his leg and took readings down to the ankle. Down near the lower end of the leg there was a very definite difference in the oscillation of the needle. This proves that within thirty-six hours he had some trouble in his foot. Maybe he would not have developed it if he had not had some arteriosclerosis.

Dr. Regnier: Had this man been unconscious?

Dr. Cranmer: He had not been completely unconscious. He gradually became affected and was taken home at once.

Dr. Regnier: This is an important subject from the standpoint of industrial medicine. I have seen many men with monoxide inhalation but I never saw any bad effects afterwards. From the standpoint of industrial medicine, it is worth investigation. Why isn't there more permanent cerebral damage if it is on the basis of methemoglobin? Why aren't all extremities affected? When was that German report on that child?

Dr. Cranmer: I think it was about 1921.

Dr. Regnier: It brings up the question if there was some other thing besides monoxide gas, such as rheumatic heart disease, Berger's disease, diabetes, or chronic arteritis.

Dr. Cranmer: These cases were definitely secondary to the inhalation of carbon monoxide gas, I think, and apparently the insurance company thought so in the case I reported, as they have assumed financial responsibility and paid the patient for eighteen months.

Dr. H. O. McPheeters: I have had such beautiful results following sympathetic block in phlebitis I cannot but feel we should have done it in this case. In many cases the leg will change from a cold leg to a warm leg and from a warm leg to even a hot leg. In this case it would have been done strictly empirically, since this was an arterial blockage and destruction. In either case it is done with the idea in mind of dilating the terminal arterioles to permit more arterial blood to flow to the part.

CARPAL BONE INJURIES

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The carpus is a composite structure which makes it possible for the hand to be placed in its various functional positions. Injury to any one of the component parts of the wrist usually produces marked functional disturbance. In many cases the disturbance seems to be out of proportion to the sustained injury.

The carpal bones are arranged in two rows: The proximal row consists of the navicular, lunatum, triangular and pisiform. The distal row consists of the greater multangular, lesser multangular, capitate and hamatum. The three bones of the proximal row namely, the navicular, lunatum and triangular, form a convex articular surface which articulates with a concave articular surface formed by the distal end of the radius and the articular disk. The proximal row of carpal bones are not firmly attached to the adjacent bones and participate to a greater extent in the motions of the wrist than do those of the distal group. The bones of the distal group are fixed more firmly by ligaments to the second, third and forth metacarpal bones and consequently act as a fixed unit with the metacarpals.

A great portion of the surfaces of the carpal bones

TABLE I. AGE INCIDENCE

	Percentage of cases	
1st decade, 0 to 10 years	0	
2nd decade, 11 to 20 years	8.9%	
3rd decade, 21 to 30 years	12.5%	
4th decade, 31 to 40 years	19.6%	57.2%
5th decade, 41 to 50 years	37.6%	
6th decade, 51 to 60 years	14.3%	
7th decade, 61 to 70 years	5.4%	
8th decade, 71 to 80 years	1.7%	

is covered with articular cartilage. There is no true periosteum present; a fibrous tissue covers the portion not occupied by the cartilage. The supporting ligaments of the wrist enclose the carpal bones and are attached to them along the areas not covered with cartilage. There is no muscle tissue in contact with the any of the bones. The blood supply is relatively inadequate, coming mainly through the terminal twigs of the radial and ulnar arteries. The blood vessels enter the bones through the ligamentous attachments. The carpal bones are composed of cancellous bone. These factors make for slow or delayed union and in some cases favor the production of nonunion or bony necrosis. Because the blood supply enters through the ligamentous attachment the chip fractures which occur in the carpal bones do disturb the blood supply and sometimes produce prolonged disability.

The actions of the wrist are carried out mainly through the radio-menisco-carpal and intercarpal articulations. It is important to remember the position of the navicular in its relation to the remaining carpal bones. It is located in the proximal row and its distal portion lies in the distal row as well. Because of its anatomical position the navicular is subjected to the mechanical forces of each group. In the case of ulnar or radial deviation of the hand a shearing force is applied to the long axis of the navicular.

The material used in this study consists of thirty-three cases occurring in practice with my associate, R. C. Webb, and forty-two case records at Asbury Hospital. The x-ray films of all seventy-five cases were reviewed.

The carpal bone injuries occurred in sixty males and fifteen females, the males predominating four to one. Most of the males were individuals who used their hands for heavy work.

The majority of the injuries occurred in the fourth and fifth decades. It has been stated that these injuries occur more frequently in the third and fourth decades. These injuries may occur in any period of adult life. In this series the injuries were about equally divided in the third to the sixth decades with the exception that 37 per cent occurred in the fifth decade.

The seventy-five cases of carpal bone injury consisted of seventy-nine fractures and eight dislocations.

TABLE II. DISTRIBUTION OF CARPAL BONE INJURIES

	Fractures	Dislocations	Per Cent	
Proximal Row				
Navicular (Scaphoid)	38	1	44.8%	86.2%
Os lunatum (Semilunar)	13	7	23.0%	
Os triquetrum (Cuneiform)	16		18.4%	
Os pisiforme (Pisiform)	4		4.6%	
Distal Row				
Greater multangular (Trapezium)	2		2.3%	
Lesser multangular (Trapezoid)	1		1.1%	
Os Capitatum (Os magnum)	1		1.1%	
Os hamatum (Unciform)	4		4.6%	
	79	8		

They were distributed in the carpus as shown in Table II.

The proximal row of carpal bones sustained seventy-nine injuries and the bones of the distal row sustained eight. The bones of the distal row are protected from trauma by being more firmly fixed in their position and thereby acting as a unit with the metacarpal bones.

The navicular, lunatum and triangular bones were injured more frequently than the remaining carpal bones. In this series they sustained 86 per cent of the injuries. It is usually stated that the navicular bone is the one most frequently injured. Cave[3] reports a series of fifty-two carpal injuries of which 70 per cent were navicular fractures. Hook,[10] reporting a series of 175 carpal fractures, found 82 per cent navicular fractures. In this study the navicular injuries were 44 per cent, the lunatum injuries 23 per cent and the triangular bone injuries 18 per cent. Any one of the three bones in the proximal row may be injured. The navicular bone was injured twice as frequently as the lunatum or the triangular.

The injuries were about equally divided between the right and the left wrists. There were forty-one in the right wrist and forty-five in the left. This includes one case of bilateral fracture of the navicular.

In this group there were seventy-eight recent injuries and nine old ones. The nine old injuries were nonunions of fractured navicular bones.

Injury of a carpal bone is frequently associated with fractures in other carpal bones or the radius and the ulna or the metacarpal bones. This is readily understandable because the mechanism of injury in the fracture of these bones is usually the same, namely, a fall on a dorsiflexed or volar flexed outstretched hand.

The carpal bone injuries in this group were complicated in 44 per cent of the cases by a fracture in some other bony structure of the wrist. Fractures of another carpal bone and fractures of the radius or of the ulna or both of these bones occurred an equal number of times. The associated fractures ranged

TABLE III. CARPAL BONE INJURIES

Associated Fractures

	Other Carpal Bones	Radius and/or Ulna	Meta-carpals	Other Fractures
Proximal Row				
Navicular (Scaphoid)	4	7	1	4
Os lunatum (Semilunar)	5	5		1
Os triquetum (Cuneiform)	6	2		1
Os pisiforme (Pisiform)	1	1	1	
Distal Row				
Greater multangular (Trapezium)			1	
Lesser multangular (Trapezoid)				
Os capitatum (Os magnum)		1		
Os hamatum (Unciform)	1	1	2	1
	17	17	5	7

from a minimal fracture in some cases to extensive comminuted fractures in others. This speaks for the fact that when a carpal bone is injured, the entire wrist structure is subjected to a traumatizing force and in nearly half of the cases may cause a fracture in one or more bones of the wrist.

To insure satisfactory healing, fractures of the navicular should be diagnosed as soon as possible after the injury and adequate immobilization applied. Roentgen examination will make the diagnosis. The roentgen examination of carpus should always include an oblique view so that the navicular is completely visualized and a fracture not missed. In cases where the clinical evidence supports the probability that there is a fracture of the navicular, and the anteroposterior, the lateral and the oblique roentgenograms are negative, taking the roentgenogram with the hand in extreme ulnar deviation may demonstrate the site of fracture. Fractures are frequently missed and the injury is treated as a sprained wrist. The sprained wrist does not get well and subsequent roentgenograms show the fracture with bony absorption or cyst formation in the fragments of the navicular. The common error in the diagnosis of this lesion is one of omission rather than commission.

There are three types of fracture occurring in the navicular: (1) fracture of the tuberosity; (2) fracture of the waist; and (3) comminuted fracture of the body. The fracture of the tuberosity of the navicular is an avulsion fracture which is caused by the pull of the radial collateral ligament when the hand is dorsiflexed and deviated ulnarward. These fractures always heal.

The fracture of the navicular through the waist is usually caused by a fall on the dorsiflexed hand in either ulnar or radial deviation or by a powerful force directed against the heel of the palm when an object is grasped. The fracture is usually a line transverse to the longitudinal axis of the bone. The fracture may occur as a faint line or there may be some separation of the fragments.

A comminuted fracture of the body of the navicular usually occurs when the force of a fall or blow is received with the hand dorsiflexed and radially deviated to the limit. In that position the navicular is fixed and the force is transmitted through the capitate bone against the body so producing the comminution of the spongy bone.

The blood supply of the navicular is obtained from the terminal twigs of the radial artery. These terminal vessels enter the bone along an oblique dorsal ridge where the supporting ligaments are attached. The main artery enters at or near the tuberosity. Obletz and Halbstein[16] studied 297 naviculars and found that in 13 per cent there was no arterial foramina proximal to the waist and in 20 per cent there was only one foramina at the waist or proximalward. Because of this anatomical arrangement a fracture of the second or third type may produce a disturbance of the blood supply in one-third of the cases and may be one of the reasons for the complications that occur.

Fractures of the navicular should be immobilized early and adequately. Early recognition and immobilization will prevent further damage to the blood supply and may in some cases be the factor that will allow healing to occur. Jaekle and Clark[12] reported seventeen cases of fractured naviculars that were treated by immobilization within one hour following the accident. They were immobilized from six to eight weeks and all but two had bony union. Functional results were good in all cases and there was no permanent disability.

An adequate immobilization means the wrist placed in dorsiflexion of about 40 degrees and radial deviation of about 15 degrees. MacConaill[13], at the University of Sheffield, showed in a study of the mechanical anatomy of the carpus, that the carpus participates in a screwvise or clamp action, so that by dorsiflexion the carpal bones are packed closer together and the parts are pressed together and fixed. The distal two-thirds of the forearm, the wrist, the hand to the metacarpophalangeal flexion crease, and the thumb to the interphalangeal flexion crease are enclosed in a plaster-of-Paris cast. The thumb is fully abducted and immobilized so that the motions of the first metacarpal are not transmitted into the carpus. The wrist is immobilized for eight weeks. A leather wrist support with a thumb loop is worn from four to six weeks after the cast is removed.

In case there is no union, or evidence of bone necrosis is manifest at the end of eight weeks the immobilization is continued. At the end of four months if union has not occurred operative treatment may be required.

In this series there were nine cases of nonunion following a fracture of the navicular. Seven patients had had some active treatment and two had had no treatment. In one of the latter two the injury had occurred sixteen years previously and in the other an indefinite number of years previously. The wrist in the first case had limitation of motion but was free of pain. The second case was one that had had bilateral fracture of the naviculars and showed bony absorption at the

fracture line. There was no limitation of wrist motion and there were no symptoms.

One case of nonunion was treated with immobilization in a plaster-of-Paris cast. In two cases the proximal fragment had been excised. In two cases the entire fractured navicular had been excised. Dowel bone grafts were performed in two cases. The two bone graft cases have been followed and these two patients have normally-functioning wrists and are symptom-free.

All these methods have been advocated for the management of ununited fractures of the navicular. Another procedure which has been utilized is the drilling of the fragments of the navicular in the long axis of the bone. This is performed with the idea of improving the blood supply to the bone. All these procedures are followed by the immobilization of the wrist in a cast.

Each method has produced satisfactory as well as unsatisfactory results. The surgical literature contains advocates for each procedure. There is no one procedure that is uniformly successful. In view of the work done on this problem in the last two decades it appears the best results are obtained from using bone grafts, a procedure which was first reported by Adams in 1928.[4] The procedure should be done so that there is minimal surgical disturbance to the carpal structures. The distal end of the navicular is exposed in the anatomical snuff box. The drilling and application of the graft is done under radiographic control. This method has the advantages of drilling the bone, of internal fixation of the fractured fragments and of insuring an adequate local supply of calcium for bone healing. The procedure maintains the navicular in the architecture of the carpus. When the navicular is removed, the hand becomes deviated radialward and the strength of the grip is diminished. This is a definite disability in those individuals who are required to use their hands for heavy work in making their livelihood.

Dislocation of the lunate bone is not a frequent injury of the carpus. In this series there were seven dislocations in the seventy-five cases of carpal bone injuries studied. All the dislocations were to the volar surface of the wrist. This injury causes marked immediate disability in the wrist and hand. The dislocated lunatum encroaches upon the structures in the carpal tunnel. Pressure is produced upon the flexor tendons and may involve the median nerve. A fullness is produced in the front of the wrist, the wrist is stiffened, the grip of the hand is weakened, and motion of the fingers is sometimes restricted. There may be parethesias or anesthesia of the skin supplied by the median nerve.

In the seven cases of dislocation there were five recent injuries and two in which dislocation had been present for six weeks. In three cases there were no associated carpal injury and in four cases the dislocation was associated with a fracture in one of the other carpal bones. The triangular bone was fractured in three cases and fracture of the navicular occurred in one case.

In three of the recent dislocations the lunatum was reduced by a closed method and plaster-of-Paris splints applied. In the other two recent cases closed reduction was unsuccessful and the dislocated lunatum was excised. In one of these cases the fractured fragment of the triangular bone, which was dislocated with the lunatum, was excised with it. In neither of the two operated cases was a reduction of the lunatum possible without injury to the articular surfaces of the lunatum or the other carpal bones.

In the old dislocations of the lunatum, the bone was excised. The normal space occupied by the lunatum had diminished so that it was impossible to obtain a reduction.

A lunatum dislocation should be considered when an injured wrist presents an indurated fullness in the volar surface of the wrist and a marked limitation of flexion. Lateral roentgenograms will show the dislocation.

The treatment of this condition is an early reduction. The reduction will be easier and will be successful more often if it is performed as soon after the injury as possible. If a closed reduction cannot be accomplished after two attempts an operative procedure is indicated. Further attempts at closed reduction may cause irreparable damage to the articular surfaces or to the blood supply and so create degenerative changes.

When an open procedure is done the lunatum should be replaced to its normal position. The carpus will thereby retain its normal anatomical structure and its functions will be preserved. This may not be possible in all cases as the manipulation will cause too much damage to the articular surfaces of the lunatum or of the contiguous carpal bones. An excision of the lunatum under such conditions is indicated. The lunatum should be removed if it is found on exposure to be extensively injured. Degenerative changes frequently occur following such conditions. A painful wrist causing a marked disability results.

Summary

1. A study of seventy-five cases of carpal bone injuries was presented.

2. The navicular fractures had an incidence of 44 per cent.

3. Forty-four per cent of the carpal bone injuries were associated with other fractures of the wrist structure.

4. Most navicular fractures will heal with good function if recognized early and immobilized adequately.

5. Dislocation of the lunatum should be reduced early by closed manipulation. Open reduction is indicated after two attempts at closed reduction have failed.

6. Carpal bone injuries should be suspected in all sprained wrists.

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Discussion

Dr. E. A. Regnier: I think Doctor Anderson should be complimented on his report. He has a large series of cases with accepted methods of treatment and excellent results. I think it should be stressed that many navicular injuries are overlooked because of the failure to take an oblique view by x-ray. In any suspected carpal injury, if x-rays are negative, the wrist should be rerayed in seven to ten days. A fracture line will usually show better after an interval of time.

The meeting adjourned.

Ernest R. Anderson, M.D.
Recorder.

CHANGES IN THE RURAL BIRTH RATE

Dr. Philip M. Hauser, Assistant Director of the United States Bureau of the Census, recently stated, "For a long time the great cities of our country have not even sustained their own population. A disproportionately large birth rate among rural families has kept the national birth rate increasing even though the tempo is slowing greatly. But many of our soldiers today are getting a new experience in life which is bound to have an impact on the postwar world. I firmly believe they will adopt the urban pattern, and the rate of rural births will tend to decline."

Dr. Hauser believes that rural women and girls are also being influenced by their wartime jobs. He thinks it is logical to assume that their changed views of living standards will result in fewer children.

PLAIN TALK, III

There is one good point about being in agreement about something—you can go about your business expeditiously without wasting a lot of time squabbling.

Take voluntary prepaid medical care, for instance. There used to be some doubt and uncertainty about it; would it work? Did the doctors think it a good thing? How did the people feel about it? Would the medical profession support it? That was long ago.

Now the medical profession is squarely behind it, the public wants it, nobody opposes it who is sufficiently informed on the subject to know what it is all about. Take one aspect of it, for example. How can any plan to insure people against illness work unless the doctors are behind it? The whole principle of insurance depends upon *enough* lives, or houses, or automobiles of just plain people who pay premiums to meet the *cost* of the thing they *insure against;* in this case, *illness.* Next there must be enough doctors to treat the people, good doctors, too, or the people won't buy the insurance. Why should they put up with other than the *best* medical care? When they buy something they want the best that can be had. That is why the doctors themselves, through their Medical Society of the State of New York, are sponsoring voluntary prepaid medical expense indemnity insurance. That is why the Medical Society is setting up, right now, a Bureau of Medical Care Insurance with a full-time director so that the people can have the kind of insurance they want, backed by the doctors themselves. Such insurance is *safe* insurance.

Many of you remember the watch that made the dollar famous. It was good because it had responsible people and good workmanship and materials in it. Voluntary medical care insurance backed by responsible doctors is good for the same reason. Such insurance provides medical care of a quality that the doctors, through their State Medical Society, propose to furnish to those who want to buy insurance against illness.

It is not to be anticipated that you can start with a perfected plan. You can start with an actuarially *sound* plan, and you can set your upper limits of acceptance in a manner or at a level to include 94 per cent or thereabouts of all the people in the country. Then, after you have eough subscribers to your plan you can modify the details as may be necessary, and as accumulating *experience* seems to direct. But you certainly cannot go until you start.

Even though the people want prepaid medical care insurance it will take some time to cover 94 per cent, say, of the people of the country, or even of this State. Policies have to be written and marketed. So it's up to us to take the driver's seat and deliver the goods, isn't it? What is to stop us? Nothing that we can think of at the moment. Doctors have never yet been stopped from doing anything which they thought was for the public interest, and for the betterment of the public health, come hell or high water.—Editorial, *New York State Journal of Medicine,* October 15, 1944.

Minnesota State Medical Association

Ninety-first Annual Session

April 12, 13, 14 and 15, 1944

Rochester, Minnesota

HOUSE OF DELEGATES

Assembly Room
Mayo Clinic
Wednesday, April 12, 1944

(Continued from October issue.)

Wednesday Evening Session

Chairman Will called the meeting to order and, having been informed by Dr. Lexa, chairman of the Committee on Credentials, that a quorum was present, asked Dr. W. F. Braasch of Rochester to introduce the president-elect of the American Medical Association, Dr. Herman L. Kretschmer of Chicago.

DR. BRAASCH: It gives me great pleasure to introduce Dr. Kretschmer because he is one of us and has ascended from the ranks. He has been a leader in organized medicine for many years, having served as treasurer of the American Medical Association for ten years, and he is well acquainted with our problems. He has been good enough to come here and discuss them informally with us. I hope he can point the way to their solution. Dr. Kretschmer.†

* * *

Chairman Will then called for the report of Dr. J. C. McKinley, secretary-treasurer of the Minnesota State Board of Examiners in the Basic Sciences.

* * *

DR. MCKINLEY: The official list of practitioners licensed to practice in this state is not yet off the press and I am therefore unable to break down this year's experience in relation to the licensing of other practitioners of healing. Since 1927 when the Basic Science Board was established, 3,470 individuals have been examined by the Board. At the present time, the number of failures stands at 170, or 4.6 per cent. In the last examination, however, the failure rate was a little bit high, approximately 38 per cent. I don't know whether we were too hard or the examinees were too soft.

* * *

Chairman Will then called for the report of the Minnesota State Board of Medical Examiners which was given by Dr. Adson in the absence of the secretary, Dr. J. F. DuBois, Sauk Center.

* * *

DR. ADSON: During 1943, 232 medical licenses were issued, 107 of them to graduates of the University of Minnesota. The total number of registrations in the state, at the present time, is 4,512. Many of these, of course, are in the service. Many others have moved to other states but maintain their license by registration, here. There are also 162 licensed osteopaths in the state, 378 chiropractors, 128 masseurs and forty-two midwives. From 1927 to 1943, fifty osteopaths have been licensed to practice in the state (eighteen by reciprocity) and thirty-five chiropractors (twenty-two by reciprocity). Several of the latter came from Iowa with which Minnesota has recently terminated reciprocal relations, so far as licensure goes. The basic science examination was passed, this year, by 155 doctors. Twelve doctors of medicine failed to pass that examination.

During 1943, eighty-three doctors of medicine, one osteopath, six chiropractors, one masseur and two midwives died.

Out of forty-two investigations made during the year, eighteen cases came to court with seventeen convictions and one dismissal. There were four revocations of licenses to practice for infringement of the law among doctors of medicine, three suspensions of license and three re-instatements. License of one midwife was revoked. During the period from 1928 to 1943, there have been 238 court cases. Of these, 206 resulted in convictions, thirty-two in non-convictions; and of the latter, thirteen were judged not guilty, fourteen were dismissed and three were not indicted. One jumped bail and one died before court proceedings were completed.

Legal expense for 1943, including attorney's fees, travel, preparation of legal documents, expense of bringing in witnesses and reporter costs, was $7,158.61.

Among other items of interest, during 1943, were the following: sixteen women doctors were licensed in Minnesota during the year; five doctors were certified to other states; six Board meetings, two of them special meetings, were called during the year. One of the latter was called to accommodate University graduates so that they could accept commissions in the military services without delay.

The secretary was appointed to the advisory board of the War Manpower Commission in December 6, 1942, and attended a meeting of the Procurement and Assignment Service in Washington in January, 1943, to discuss adjustments in examinations for candidates for commissions and also legal requirements in Minnesota as to medical courses.

The Board has a working balance on hand at the present time of $12,646.87. Fortunately, reduction of the registration fee from $5.00 to $2.00 has not resulted in the anticipated shortage of funds and the Board has continued to have the means to finance an energetic program for elimination of quacks, cultists and of irregular practices among licensed physicians.

Members of the State Board of Medical Examiners feel that they are a part of the state medical association but, in no sense, do they desire to exert any undue influence over the association. Instead, it is their aim to help their colleagues in the profession in every way possible and, at the same time, to bring about and maintain a high standard of practice in Minnesota.

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Chairman Will then called for a report from Dr. W. F. Braasch of Rochester, chairman of the State Committee on Procurement and Assignment.

* * *

DR. BRAASCH: Much has happened since I made the first report of the committee to the House of Delegates two years ago. Many of the problems then under discussion have since been ironed out; and most of you know, I feel sure, that this committee has tried to coöperate in every way possible and at the same time do its duty toward our country. There is no question but that the profession in Minnesota deserves

†See page 913 for Dr. Kretschmer's address.

great credit for the way its members have supported our country's needs in the Armed Forces. The great majority of the men now serving volunteered early and willingly, and only with a comparative few has it been necessary to use any persuasion. At present there are 1400 Minnesota physicians in the armed services. Before the war, some 3200 were in active practice with about 300 engaged in public health work and as teachers and in allied activities, making a total of about 3500 licensed in the state. Of the 1400 now in the services, about 1300 are on active combat duty, 100 are in public health work and in other government agencies. There are remaining in practice at home about 2100 doctors. Obviously we have done our duty.

The rural areas have undoubtedly suffered most from lack of physicians as a result of the year. There are areas in this state where the ratio is one physician to 5,000 or 6,000 population. In others the ratio is one to 3,000 or 4,000. Deaths of the eighty-three physicians recorded for the year have also left several communities seriously short of medical service. In some areas, this deficiency has been met by neighboring doctors. Through Mr. Rosell's efforts physicians disqualified for military service have been induced to take over a few of these vacant areas. But it has been quite a problem.

Of the total who applied for commissions, 295 were rejected for physical and other reasons. Fifteen men who were in the service have been discharged and returned to practice. We have had some difficulty inducing men rejected for service to establish themselves where they are so greatly needed and there are several areas still without physicians.

During the last year our efforts for recruitment for the armed forces have been directed to men from thirty-eight to forty-five years old. With the aid of the active Officer Procurement Services conducted by Major Bronson and Lieutenant Cassidy, most of the available men have been easily persuaded to apply for their commissions. The central office of Procurement and Assignment sent a recruiting team on tour which visited both Saint Paul and Minneapolis, as part of this effort.

One of the difficult problems of the year was the allotment of a reduced number of interns and residents to the hospitals. As you know, the number of interns available was reduced to 60 per cent of normal and the number of residents to one-third. Allotments for 1944-45 are as follows: interns, ninety-one; residents, 386. Of the residents, 231 were allotted to the Mayo Foundation and the size of that allotment may call for an explanation. At the request of the Director of the Mayo Foundation, am therefore giving you the following brief report concerning participation in the war effort by the staff of the Mayo Clinic and Foundation.

From the permanent staff, forty-eight members have gone into the armed forces. This number includes seven of the senior surgeons in the division of surgery. Several of the other special sections have lost 50 per cent or more of their original staff. In addition, certain governmental agencies, including the National Research Council, have appointed nineteen members of the staff to various responsibilities in which they are engaged in part or full-time service. Of the fellows, 252 have gone into the medical corps of various branches and ninety-two others have already received commissions and are awaiting the call to active duty. That makes a total of 344 fellows and first assistants. The quota allowed to the Clinic is less than 40 per cent of the normal number and this quota has been filled largely from among men disqualified for active duty and from the small group allowed under the 9-9-9 program. No adjustment in the quota was made to take care of the increase in registration at the Clinic. Most of the research activities carried on by the Foundation, except those of a military character, have been closed or temporarily deferred. Since the beginning of the war, the Aero-Medical Unit for Research in Aviation Medicine has been in close cooperation with the Air Surgeon. For this unit, it was necessary to build and equip an addition to the Medical Science building and for various members of the staff, including physicians, physiologists, physicists and technicians, to devote their entire time to the project. Also, contracts have been made with the National Council for Scientific Research and Development and with Wright Field for certain additional investigations in the physiology of high altitude flying, administration of oxygen and use of oxygen therapy, centrifugal force, air embolism and dark adaption, in coöperation with other laboratories.

Courses of instruction for officers assigned by the Surgeons General of the Army, Navy and Public Health Service and the Veterans' Administration have been carried on at the Clinic since January, 1942, during which time more than 1,000 medical officers have received training. Also, in view of the urgent need for physical therapists, a training course was established by Dr. F. H. Krusen, during which, since 1938, 375 technicians and 125 physicians have completed a twelve-month course.

It seems evident, therefore, that the quota of residents and staff members allotted to the Mayo Clinic and Foundation is in keeping with the professional status in other parts of the state.

We, in Minnesota, should certainly coöperate with the committee of the American Medical Association which is directing postwar activities for future rehabilitation of physicians. A state committee could be of great help and the State Procurement and Assignment committee can be of assistance.

I would like to call attention to the fact that some hospitals have failed to take advantage of the opportunity of retaining a third of their interns as residents and so of securing additional help. It should be noted, of course, that proper educational training must be provided; otherwise, there is no excuse for a residency.

On the whole, the profession in Minnesota deserves much credit for its work in support of the Armed Forces. Great credit should be given also to those who have remained in practice here. Many are overworked and worn out. The sacrifice they are making is as great as that of men who have applied for commissions. In closing, I would like to give full credit to Mr. R. R. Rosell and his staff for their efforts in expediting the work of the committee. It is largely due to their efforts that the favorable balance of medical service in Minnesota has been maintained.

* * *

Speaker Will then called on Dr. E. J. Simons, chief of the medical unit of the Division of Social Welfare, for a report of the work of his unit.

* * *

Dr. Simons: Each year that it has been my privilege to report to you, the director of the Division of Social Welfare has been changed and the previous director has gone into the armed forces. This year Mr. Bernard Levander went into the Navy and the Governor appointed in his place, Mr. Earl Berg, as acting director. Mr. Berg has been employed in the Division of Administration for some years and, prior to this appointment, he served as Chief of the Finance and Management Unit of the Division. He is an auditor by profession and is deeply interested in government economy. Mr. Berg has stated that no changes of a medical nature will be made in the work of the Division of Social Welfare without prior consultation with authorized representatives of the profession and I believe we are extremely fortunate in his appointment.

The Director of the Bureau of Crippled Children also resigned a month ago and his duties are being assumed by the rest of the medical personnel.

There are three bureaus in the unit, the Bureau of Crippled Children, the Bureau of Tuberculosis Sanitoria and the Bureau of General Medical Care. One clinic was added to the usual seventeen held throughout rural Minnesota this year by the Bureau of Crippled Children. About 1,500 children a year are so examined, principally children under twenty-one, with orthopedic defects, who have been referred by their family physicians. In February, 1943, a rheumatic-cardiac program was added to the orthopedic program by the Bureau and, this year, with approval of the Council, pre-cardiac patients have been included. This program operates, for the present, in only six counties of the state. Physicians outside these counties have asked to be allowed to refer patients and the Medical Advisory Committee, therefore, suggested that a record of these requests over a three months' period be kept and, if the number seemed to warrant an extension, that it be brought to the attention of the Council. The Speech Training program of the Bureau has been extended recently in coöperation with the pediatric and psychiatric departments of the University of Minnesota. We have now two Speech Pathologists, one for urban areas and the other for rural areas, travelling in the state.

For the Bureau of Tuberculosis Sanatoria, a uniform system of accounting and bookkeeping is now being developed and will shortly be ready to substitute for the variety of systems now in use. The new system will make it possible to compare costs of care in the various institutions. A change has been made, in accordance with legislation passed at the last session of the Legislature, in the per diem rate for patients at the Minnesota State Sanitorium. On the basis of actual costs, the rate was raised from 1.50 per day, plus incidentals (the rate set in 1925) to $2.99 per day. The statute empowers the director to raise rates, also, in county institutions. But they will be raised only if changes are based upon an actual increase in cost of care.

Two superintendents of county sanatoria have left their positions during the past year and another has announced his intention to leave. Replacements for the first two were found with great difficulty. No replacement has been found for the third who remains at his post but threatens to leave.

The recodification of tuberculosis laws, recommended a year ago by the Council and officers of the Medical Association, is greatly needed but will probably not be done *in toto* this year. The Interim Committee of the State Legislature considered the matter and has requested that the laws be recodified on a segmentary basis and that only vitally necessary changes be made at the next session.

In the Bureau of General Medical Care several changes have occurred during the past year, among them a change in the established optical code for refractions and glasses for indigent patients, to bring it in line with the higher price of materials. The new rates were decided harmoniously by a committee on which ophthalmologists, optometrists and optical houses were represented, under chairmanship of Dr. Adson. Another is the change in method of estimating the amount to be spent for medical care in the budget of recipients of Old Age Assistance. Previously, the physician was asked to make an estimate of care needed for six months in advance. This plan was not satisfactory either to physicians or to welfare officials. As a result of studies done in Pennington County, the plan is now for the physician to send the recipient a bill for services during the previous month. The recipient, in turn, refers the bill to the welfare agent who determines the amount of the budget to be spent for medical care on that basis.

A study of 1500 cases in the program of Aid to Dependent Children revealed the fact that many cases had been denied a grant because blanks used for the purpose did not provide for sufficient medical data. Blanks have now been revised and it is hoped that they will better meet the need.

Discord between physicians and social agencies has occasionally occurred, largely as a result of lack of understanding on the part of both of the procedures involved. An attempt has been made to clarify the laws and regulations for both the physicians and the agencies this year.

Under Public Law 113, passed by Congress last year, vocational rehabilitation has been broadened to include medical rehabilitation. The law is administered by the director of vocational rehabilitation of the State Department of Education and, in conformity with an agreement approved by the Council last year, medical consultation for the program will be provided by the medical unit of the Division of Social Welfare with the advice of the medical advisory committee.

So long as all medical matters handled by the Division of Social Welfare are guided by the State Medical Advisory Committee which now consists of Dr. Adson as chairman, Dr. Coventry, Dr. Sogge, Dr. Wilson of Winona and Dr. Oliver of Graceville, we will have approval of the Council before any extensions or changes are made in our programs involving medical care.

* * *

Speaker Will then called on Dr. A. J. Chesley, secretary and executive officer of the State Board of Health.

* * *

Dr. Chesley: We are working under difficulties in the State Department of Health. Sixty-five members of our staff are in the armed forces, thirty-one of them overseas. Of these, twelve are physicians and most of them cannot be replaced. Laboratory work in the Division of Preventable Diseases has greatly increased, by reason of the fact that we are doing the work for the armed forces. It will increase still more while the technical staff is being steadily depleted.

Prevalence of communicable diseases in 1943 was unusually small. The total of deaths from tuberculosis, including four deaths of non-residents, was only 750 for the entire state. We had no cases of smallpox and only fifteen cases of typhoid, among which there were no deaths. There were twenty-eight deaths from whooping cough and nineteen, I regret to say, from diphtheria. Recently diphtheria deaths have been running about six or seven a year, part of them due, I believe, to the fact that younger men have had no opportunity to familiarize themselves with clinical diphtheria. Some of last year's deaths occurred in hospitals where the disease should have been recognized promptly, cultures taken and antitoxin administered. One reason why it wasn't done, was, perhaps, that everybody was being treated with sulfa drugs; but sulfa drugs are not effective in the treatment of diphtheria. From the viewpoint of the public, those who died from diphtheria were either too young to be immunized or too old to get diphtheria; nevertheless they died.

There has been a wide prevalence of measles, but relatively few deaths, the number being eighteen, and usually complicated by pneumonia. There were fourteen deaths from poliomyelitis and only eleven from scarlet fever, though scarlet fever was unusually widespread last year.

We are now issuing the combined diphtheria and tetanus toxoid and I hope it will come into general use. We lose approximately twenty people a year from tetanus, here and there, in various parts of the state, and apparently unrelated to any special communities or regions.

In connection with the possible hazard of tropical disease when troops return from the tropics, two members of the staff of the laboratory have taken short courses in army medical laboratories and are prepared to help out in the diagnosis of such diseases and infestations.

The Division of Vital Statistics is seriously undermanned, although, at the peak of the work in 1941 when everybody going into war work required a birth certificate, we had a staff of ninety-two people, part of the time on a twenty-four-hour basis. The staff now numbers twenty-seven, far too small a number for the work, but all we are able to provide for.

There are now forty-four counties with public health nurses, the largest number we have ever had with public health nursing service, in spite of the fact that many nurses have gone into military service. To maintain this service many who were married and had retired or gone into other work have volunteered to help out in the emergency. Miss Ann Nyquist, who is acting head of the division, has done a fine job in maintaining the service and extending it into new fields.

The Division of Child Hygiene has been obliged to administer the EMIC program and Dr. V. O. Wilson, director of the division, has been working nights and Sundays in an endeavor to catch up on payments in connection with that program. I believe I may say that very soon he will be up to date, and you won't have to wait for EMIC payments, such as they are and what there is of them.

Committee meetings being held during this session may result in proposals with reference to EMIC which you will be asked to act upon. I will not go into them now. But you should be interested, in that connection, in the fact that our maternity and infant death rate in licensed hospitals in spite of the fact that the percentage of all births in the state has increased from 43.4 in 1932 to 84.5 in 1943, is still one of the lowest in the country.

Health officers among you will be interested to know that Mr. Whittaker, director of the Division of Sanitation, has developed a new activity in controlling restaurant and food handlers' sanitation, in spite of the fact that most of the trained engineers on his staff have gone into the service. Work in the field of protection of water and milk supplies and the handling of sewage has been kept up also. Courses in food sanitation are now being given under direction of an engineer of the U. S. Public Health Service to representatives of city health departments and others. They began with courses for University people who are concerned in food handling.

Work of the Division of Industrial Health, of which Dr. Foker is director, has been unusually hampered by the fact that nearly all of the men trained in industrial health are young and of military age. About 77 per cent of the requests for service made to that Division come from plant management, a high percentage in comparison with other parts of the United States. Dr. Foker has carried out large numbers of field examinations and laboratory studies and has also carried on a series of lectures and publications in an effort to interest people in the field of public health. There is a bill now before Congress which would provide five million dollars for distribution to labor departments by the U. S. Department of Labor, for safety and compensation work, with laboratory work to be done by the departments of health. By this bill, the public health service would become the handmaid of the Department of Labor which is interested, not in the health field, but in safety and compensation. We are fighting the bill, though it is likely to pass, because we believe that our industrial health work would go to pieces, under it. We have the backing of our people in Congress, especially Dr. Miller of Nebraska, former state health officer, who is presenting a minority report which we hope will carry some weight.

The State Health Department has been instructed to assist in every way possible with carrying out provisions of the new vocational rehabilitation act about which Dr. Simons spoke to you and it has also been instructed to assist by approving relocations of physicians, under the law providing subsidies for establishment of physicians in shortage areas.

The present full-time health districts in Minnesota are limited to four, plus the one which handles all work for the Chippewa Indian Service. I am in the sad position of having to report that three of the four medical officers heading these districts have left and cannot be replaced. At the present time, I am trying to keep the organization intact so that the nursing service, anyway, will not be lost. Dr. Haven Emerson, now taking Dr. Gaylord Anderson's place in the public health department at the University of Minnesota, is chairman of a committee of the American Public Health Association which is working out a plan for full-time health districts all over the country. This plan has the approval, in principle, of the House of Delegates of the American Medical Association. In coöperation with Dr. Emerson, we have worked out a plan for ten full-time health districts here, at some time in the future, and we hope to get aid from the Legislature to extend public health nursing service to all counties.

On May 12 and 13, ten or twelve people of international reputation in the public health field are coming to the University for a seminar on public health administration, and we are calling an executive session of the Minnesota State Sanitary Conference at the same time so that local health officers will have a chance to attend this seminar. At this executive session, the question of pay for local health officers will come up again. Since 1907 there has been a committee working on this question of pay for health officers, and questionnaires have been sent repeatedly to the 686 physicians who are local health officers serving the eighty-seven counties, ninety-seven cities, 632 villages and 750 townships of the state, asking what, if any, remuneration they were receiving. Last year, we had the largest number of returns from this questionnarie. Nevertheless, it is certainly embarrassing, on the basis of the number of replies which came in, even last year, to try to present any kind of proposition for increasing the scale to Dr. Sogge's Committee. We ought to do better. Certainly the health officers will have to decide what they want and then make it possible for somebody to state the facts in such a way that we can get action.

So far as the appropriations for our work which come under Title 6 of the Social Security Act go, we shall have about the same amount next year as this, except that there will be a little bit different distribution.

Col. J. H. C. Moore, Surgeon of the Seventh Service Command, has sent us figures on the incidence of venereal disease in this area in which he says that the ratios for the first two months of 1944 are 50 per cent higher than the corresponding months of 1943. He wishes these figures brought to the attention of the physicians of the state. In Minnesota, our figures for January and February, 1944, showed only two-tenths rise over the figures for the same months in 1943. We averaged in 1943, for primary and secondary infections, about 20.3 cases a month. The added two-tenths doesn't mean much under ordinary circumstances, but, of course, Col. Moore is right in saying that, in these times, we cannot be certain what is going to happen. January and February figures are usually low for the venereal diseases so it is possible that we may have an increase here in Minnesota. The situation is being handled by Dr. Irvine, however, with the assistance of practicing physicians; and I don't think it will be found necessary to establish any public clinics or employ any full-time people for treatment work. If any such changes in the program should be demanded, they will certainly be referred to your Council before any action is taken.

Appropriations for the EMIC program will have a hearing before a committee of Congress on April 27 and 28 and the State Board of Health will meet on April 20. Anything that this House of Delegates decides to do on the matter will be brought to the Board on that date and I am sure will receive a sympathetic hearing. Between July 6, 1942, and April 3, 1944, there was a total of 6,941 applications under EMIC. Of these,

343 were cancelled as ineligible, leaving a total of 6,598 approved cases. We have had $434,350 for the program up to March, 1944, from the Children's Bureau and expect to have $150,000 more, making a total of $587,350, out of which payments were made, up to April 1, of $103,523 covering medical, hospital and nursing care for 1,204 cases or an average for everything of $80 per case. This has been done without much increase in administrative costs of the division, though the estimated administrative cost would be $32,000, on the basis of 4 per cent of the amount it is expected we will handle—$800,000. If you will, contrast that amount with the appropriation given by the Legislature to the Division for its entire program which is $17,000, you will see what Dr. Wilson has been trying to do.

* * *

There being no further resolutions ready to submit to the Committee on Resolutions, Speaker Will called for the Necrology report which was given as follows, by Dr. F. J. Hirschboeck, of Duluth.

NECROLOGIST'S REPORT

JOHN BUTLER, Minneapolis. Born 1876. University of Minnesota, 1903. Died September 17, 1943. Aged sixty-seven.

JAMES P. CALDWELL, Saint Paul. Born 1884. University of Minnesota, 1909. Died January 20, 1944. Aged sixty.

LEWIS M. DANIEL, Minneapolis. Born 1894. University of Minnesota, 1923. Died March, 1944. Aged fifty.

PHILIP A. DELAVAN, Saint Paul. Born 1899. University of Minnesota, 1927. Died September 12, 1943. Aged forty-four.

LAWRENCE F. DUGAN, Faribault. Born 1898. Marquette University Medical School, 1924. Died July 17, 1943. Aged forty-five.

SIGFRED ENGH, Jackson. Born 1886. University of Minnesota, 1914. Died December 14, 1943. Aged fifty-seven.

CAPTAIN WILLIAM MORGAN HALLER, JR. Born 1910. University of Nebraska, 1933. Died 1944. Aged thirty-four.

MAX S. HIRSCHFIELD, Duluth. Born 1867. Hamline University, 1902. Died September 4, 1943. Aged seventy-six.

ANDREW RICHARD JOHNSON, Isanti. Born 1899. University of Minnesota, 1929. Died July 25, 1943. Aged forty-four.

HARRY T. KING, Minneapolis. Born 1895. Marquette University Medical School, 1924. Died October 10, 1943. Aged forty-eight.

AUGUST KUHLMANN, Melrose. Born 1876. University of Minnesota, 1905. Died April 4, 1943. Aged sixty-seven.

OSCAR O. LARSEN, Detroit Lakes. Born 1877. University of Minnesota, 1907. Died November 7, 1943. Aged sixty-six.

GEORGINE LUDEN, Victoria, B. C., Canada. Born 1875. University of Munich, Bavaria, 1912. Died November 20, 1943. Aged sixty-eight.

F. B. MORRISSEY, Saint Paul. Born 1891. University of Minnesota, 1919. Died June 16, 1943. Aged fifty-two.

WILLIAM GERARD PARADIS, Crookston. Born 1899. University of Minnesota, 1926. Died July 7, 1943. Aged forty-four.

J. L. ROTHROCK, Saint Paul. Born 1863. University of Pennsylvania, 1888. Died July 5, 1943. Aged eighty.

ARNOLD SCHWYZER, Saint Paul. Born 1864. University of Zurich, Switzerland, 1888. Died February 19, 1944. Aged eighty.

FRED SHEPPARD, Hutchinson. Born 1869. University of Minnesota, 1891. Died September 25, 1943. Aged seventy-four.

ALLAN B. STEWART, Owatonna. Born 1863. University of Minnesota, 1891. Died October 31, 1943. Aged eighty.

ELWYN VINCENT STRAND, Bayport. Born 1902. University of Minnesota, 1929. Died November 27, 1943. Aged forty-one.

CHARLES S. SUTTON, Saint Cloud. Born 1884. University of Minnesota, 1909. Died September 21, 1943. Aged fifty-nine.

CEPHAS SWANSON, Minneapolis. Born 1876. University of Minnesota, 1907. Died July 20, 1943. Aged sixty-seven.

ALBERT THOMPSON, Saint James. Born 1872. University of Minnesota, 1905. Died March, 1944. Aged seventy-two.

MORLE O. THORSON, South Saint Paul. Born 1905. University of Minnesota, 1930. Died July 17, 1943. Aged thirty-nine.

C. W. TINKER, Stewart. Born 1857. Jefferson Medical College, 1878. Died December 10, 1943. Aged eighty-six.

GEORGE H. WALKER, Winona. Born 1880. University of Minnesota, 1908. Died July 2, 1943. Aged sixty-three.

ARCHIBALD WALTER WARD, Minneapolis. Born 1882. University of Nebraska, 1911. Died October 20, 1943. Aged sixty-one.

EDWARD E. WEBBER, Duluth. Born 1878. Jefferson Medical College, 1902. Died January 17, 1944. Aged sixty-four.

LOUIS B. WILSON, Rochester. Born 1866. University of Minnesota, 1896. Died October 5, 1943. Aged seventy-seven.

ELIZABETH A. WOODWORTH, Minneapolis. Born 1864. Minneapolis College of Physicians and Surgeons, 1901. Died December 15, 1943. Aged seventy-nine.

E. A. ZAWORSKI, Minneapolis. Born 1885. Creighton University, 1911. Died November 25, 1943. Aged fifty-eight.

Former Member

WALTER R. SCHMIDT, Glencoe. Born 1878. University of Minnesota, 1903. Died January 20, 1944. Aged sixty-six.

The House stood for a moment in silence in memory of departed colleagues and the meeting adjourned until Monday, 12:30 p.m.

Thursday, April 13, 1944

Speaker Will called the meeting to order at 12:30 P.M. in the Kahler Hotel Cafe. Having received from Dr. Bayley of the Committee on Credentials, a report that a quorum was present, Speaker Will asked for the report of the Chairman of the Council.

* * *

DR. BURNAP: The Council, at its second meeting, this morning, voted to recommend that Dr. W. A. Coventry of Duluth and Dr. A. W. Adson of Rochester be re-elected as delegates to the American Medical Association; that the appointment of Dr. E. W. Hansen of Minneapolis to succeed Dr. J. M. Hayes of Minneapolis as the third delegate be confirmed and that Dr. J. C. Hultkrans of Minneapolis and Dr. W. L. Burnap of Fergus Falls be reëlected alternates.

The Council also voted to follow the usual custom of sending rosters of the membership to all probate judges in the state, to insurance companies, and others.

Dr. L. N. Cruttenden, Secretary of the Minnesota State Dental Society, appeared to ask support of the Association on H. R. 4216, a bill designed to give better recognition to dentists in the Navy Medical Corps and to provide more effective dental care to Navy personnel. A resolution in support of the bill was adopted, subject to such changes in phraseology as Mr. Brist or members of the Council may think best, and with the provision that this action should be routed as may be deemed best for the good of the Association. Certain technical aspects of the bill as it now reads are to be studied by Mr. Brist, also, before action is taken. If it seems advisable, the bill in its altered form, may be sent to our new Council on Medical Service and Public Relations for further action.

Dr. Hammes presented the report of a committee of three, appointed to consider the request of inductees for medical data secured at induction medical examinations. The whole matter was tabled pending conference with Col. Radl, medical director of the Selective Service System in Minnesota.

The Council approved a resolution brought in by Dr. Sweetser on the EMIC program which is to be submitted to you for action today.

It was also moved, seconded, and carried that the Council recommend coöperation with Dr. Chesley in securing information concerning the pay of local health officers. It should be emphasized here, again, that nothing effective can be done to secure fairer renumeration for local health officers unless exact information is available as to current pay. The amount of information he has secured on questionnaires is too small to be representative. Delegates are urged to see that this information is in Dr. Chesley's hands so that it can be turned over to the Legislature. The Council also voted to coöperate with Dr. Chesley and the State Board of Health in spreading information on control of contagious diseases. Measures for prevention of diphtheria deaths are particularly needed.

Action on Dr. Chesley's request for assistance in defeating H. R. 4371 for transfer of industrial health activities to the Department of Labor was deferred pending study by Mr. Brist.

* * *

Speaker Will then called for the report of the Resolutions Committee, of which Dr. R. W. Morse of Minneapolis is chairman.

The following resolutions were unanimously approved by the delegates:

I

The thanks and appreciation of the House of Delegates is hereby extended:

To the officers and members of the Olmsted-Houston-Fillmore-Dodge County Medical Society for their services and coöperation which have made possible this fine Rochester meeting.

To the Kahler Corporation and all of the hotels in Rochester for courtesies extended to our guests.

To the Radio Station KROC for making possible the fine schedule of broadcasts arranged in connection with the meeting.

To the Rochester *Post Bulletin* and all of the newspapers and wire services of the state for their generous and accurate coverage of scientific developments and news of this meeting.

II

WHEREAS the medical profession of Minnesota notes with great satisfaction that the Council on Medical Service and Public Relations of the American Medical Association has established an information office in Washington, D. C., and

WHEREAS, this forward step is in line with the expressed desires of the vast majority of the medical profession, not only in Minnesota, but throughout the country, and

WHEREAS, the establishment of this office, in the opinion of the medical profession of Minnesota, holds promise of vastly improved public relations for medicine and for re-establishment of the prestige and good opinion to which the profession is entitled by accomplishment and public service, now be it, therefore,

RESOLVED, that the House of Delegates of the Minnesota State Medical Association, in annual session, April 12, at Rochester, warmly commends the action of the Council on Medical Service and Public Relations and reaffirms its confidence in this representative body. And be it further

RESOLVED, that this House of Delegates commends the Board of Trustees of the American Medical Association for its moral and financial support of the Council which has implemented the Council's action. And be it further

RESOLVED, that this House of Delegates instructs its secretary to spread this resolution on the minutes of this meeting and to forward copies to both the Council on Medical Service and Public Relations and the Board of Trustees.

III

BE IT KNOWN, by virtue of the authority vested in the Council by its House of Delegates that the Distinguished Service Medal of the Association is hereby awarded to Willard L. Burnap in recognition of his many years in the honorable practice of medicine in Minnesota and of his faithful service to the Association as president, and member and chairman of its Council and as leader in organized medicine.

IV

BE IT KNOWN by virtue of the authority vested in the Council by its House of Delegates that the Distinguished Service Medal of the Association is hereby awarded to William F. Braasch in recognition of his achievements in scientific medicine and of his many years of faithful service to organized medicine and this Association as president, member of the Council and committee chairman and as delegate and trustee to the American Medical Association.

Speaker Will then called upon recipients of the Distinguished Service Awards, Dr. Burnap and Dr. Braasch (the latter was not present).

* * *

DR. BURNAP: I heard Wednesday you had something like this up your sleeves. I really and sincerely feel ashamed to have you do this for me because there are dozens of men who have done more than I. I don't know just what the idea is or why you pick on me. But since you have, I guess I'll take it.

(Laughter and applause)

DR. MORSE: The following resolution comes from a joint committee representing several groups and from the Council:

WHEREAS the program now in operation for maternal and infant care for wives and infants of enlisted men in the four lower grades is unsatisfactory to the medical profession, and

WHEREAS the emergency provisions for the carrying on of the program as now in operation expire June 30, 1944, be it therefore

RESOLVED, that the Council and House of Delegates of the Minnesota State Medical Association recommend that the medical profession coöperate with the present program until its expiration date, June 30, 1944, but also urge Congress to abandon the program as now constituted on that date and be it further,

RESOLVED, that under any new program after June 30, 1944, the benefits be designated supplemental aid in the form of an allotment for medical hospital, maternity and infant care, similar to the allotments already provided for the maintenance of dependents, leaving the actual arrangements with respect to fees to be fixed by mutual agreement between the enlisted man's wife and the physician of her choice, and be it further

RESOLVED, that the American Medical Association be urged to present to the appropriate committees of Congress a concrete plan embodying this principle, to the end that the present and ultimate best interests of the wives and infants of men in service be served during the present emergency.

Mr. Speaker, I move the adoption of this resolution.

* * *

The motion being duly seconded, Speaker Will called for discussion.

* * *

DR. SWEETSER: This resolution is the result of conferences by representatives of many different committees of the Association. It came to a head when proposals were made to provide for care of non-obstetrical conditions. We have been working for a year under the plan approved by the last House of Delegates and modified as to fee schedule by the Children's Bureau. I was asked, when the request came to work out new arrangements for care of inter-current obstetrical conditions, to develop the reaction of the doctors in general and also of the service organizations, to the plan.

We have tried to leave out controversial elements in the resolution which resulted and to get at the meat of the problem. We have many members who are in the Armed Forces fighting now for our American way of life. And it is my personal idea about the matter that right here, under our noses, arrangements are being made and plans drawn up by which we are losing our American way of life, little by little, piece by piece. We are gradually losing the practice of medicine as we have always understood it.

Whenever we open a discussion of the program we immediately run into complaints: "Why do we have to answer all these questions?" "Why the red tape and delay?"

In respect to the delays, I think we should all understand that the Health Department has made a valiant attempt to carry out provisions of the Children's Bureau and with very little extra administrative assistance. I don't want the health department to feel that we are criticizing them.

The pleas made in favor of the program as it is now constituted are: that the care provided is good; that the pay is certain and that the wives are relieved of the responsibility of handling the money and seeing that it reaches the people who give the service.

On the other hand, it seems to me that, in America, when women reach the age to be married and have children they should be considered as adults and responsible enough to take care of their own affairs. If the government has not paid enlisted men enough salary to take care of medical service for their families, then they should arrange for extra benefits in the same way that they arrange allowances for housing, shelter and food.

By adopting this resolution, we shall indicate our willingness to work with the war effort; but we shall be suggesting, also, a way to do it while preserving the relationship between the patient and the doctor and giving us some chance to avoid the long-range development of government medicine.

If the program continues as at present, even if it is labeled an emergency program and even recognizing the good will and good intentions of the Children's Bureau, nevertheless we have no guarantee that later it will not be extended.

The Associate Director of the Children's Bureau has made a statement in print, that it is not too early to plan for public maternity and infant care after the war and that it will take at least ten years to work out the plans.

The program has been changed considerably since last December, with apparent improvement with each change. That may be good; but there is this aspect of it to consider: every time that this service pro-

gram is made more practical and feasible, it is just that much more certain to go on after the war, just that much more certain to be extended.

I understand from Dr. Adson that American Legion representatives who attended a Children's Bureau meeting in Washington said that the Legion would be in favor of the allotment plan for distributing benefits, in spite of the action taken by the Legion at their national convention last year.

If you extend the program from obstetrical to non-obstetrical conditions for pregnant women, you are going to extend it to non-obstetrical care for non-pregnant wives of servicemen. It can't be otherwise if you are going to be logical. If you are going to take care of the infant during the first years of life, what is to prevent you from taking care of all the children of servicemen? The emergency is not going to end on the first of July of this year. Some of the infants cared for under the program are going to be more than a year old soon. Why not extend it to provide for them after they are a year old? Why not extend it to the older children? If you are going to take care of the wives of servicemen, why not take care of the wives of veterans, too? Pretty soon, you could have the whole schedule for state medicine set up as a direct result of this program. You have the precedent right here, and the first step. If you are going to stop at all, now is the time to stop.

* * *

Speaker Will then called on Dr. Helen Curtis, field representative of the Children's Bureau.

* * *

Dr. Curtis: Whatever Congress does in relation to this program will of course dictate the course of the Children's Bureau in administrating it. If an outright grant is made to the wives of servicemen, on the same basis as the grant made for maintenance, there will probably be no occasion for the State Health Department or the Children's Bureau to enter the picture at all. However, I do think that if the benefit were to be given in the form of an outright grant, and the individual needs of mothers and infants were also taken into consideration, we would probably come back to the same type of program, eventually, that we have now.

Dr. Moe, Duluth, chairman of the Committee on Maternal Health: The principle involved in this resolution is the thing that is important—the principle of whether payments should be made, as is done, now, through a third party, or whether the direct relationship between patient and doctor should be maintained. It is too bad that the question of fees has to enter into the matter. In any case, we can't possibly decide what the fees should be under the allotment plan. That is a problem which must be worked out. There is no basis, as yet, either, for a discussion of details of administration of an allotment plan; but I believe very firmly that every effort should be made to maintain the patient-doctor relationship and I approve of the resolution as presented by the committee.

Dr. Adson: I had the privilege of sitting in at the meeting called by the Children's Bureau which was mentioned by Dr. Sweetser. It was apparent at this meeting that most of the social agencies represented were in favor of perfecting the present program. However, Dr. Sensenich, a member of the Board of Trustees, and Dr. Bauer from the AMA office and I were there to express the opinion voiced by the House of Delegates, namely, that a direct allotment to the expectant mother was the method of choice. There were many obstetricians and pediatricians present who were members of the Advisory Committee of the Children's Bureau, and apparently they were somewhat divided on the issue. We were, however, rather surprised and pleased to hear two representatives of the American Legion emphatically state that the private practice of medicine should be preserved and that service rendered to these beneficiaries would be far better if it were preserved.

Dr. Eliot took the stand that Congress had dictated the character of the program; and it is true that Congress did vote in favor of the present program. But it appears that Congress heard only one side and that the medical profession was not represented at the hearings. Nor was the American Legion. One of the Legion men said just what Dr. Sweetser said: "If you begin to render service to expectant mothers for illnesses not connected with pregnancy, there is no reason why we cannot go back to the Legion and insist that wives of Legionnaires be given similar services." Then he pointed out the evils that would develop and what would happen to medicine under such a system. I presume that Legion sentiment is divided, too, but I do believe that the major sentiment is in favor of protection for the private practice of medicine and that they would favor applying the same principles to care of these servicemen's wives as apply to any patient in private practice.

I am not sure how much will be accomplished by this resolution, but I do think that it is extremely important to pass it. It expresses the opinion of the doctors who are actually in practice, and it might go a long way toward forestalling other moves. It is conceded that the Wagner-Murray-Dingell Bill will not pass. But even if it does not pass, certain individuals are going to attempt all sorts of subterfuges and even produce bits of legislation which could remain on the statute books after the emergency. I should say, in all fairness to Miss Lenroot and Dr. Eliot, that they did not commit themselves in the discussion of whether or not the program was to be limited to the present emergency.

I believe the resolution should not only be presented to our own congressmen but to various state organizations and to the trustees of the American Medical Association. I know that Dr. Bauer is to represent the AMA at the hearing on the next appropriation for the program. Also, Dr. Joseph Lawrence, who is in charge of the Information Office of the Council on Medical Service and Public Relations in Washington, will be there. You recall that Mr. Holloway, attorney for the Bureau of Legal Medicine, sent out a circular letter to state associations asking whether they wished to be heard. I believe it would be wise if our state organization did send a representative to Washington to that hearing.

The function of the Council on Medical Service and Public Relations, in relation to representation of the profession in such matters, is not yet completely defined. We expect it to be defined at the next meeting of the House of Delegates, however, and I think most medical men do expect us to take definite action. The Council has suggested that a panel of physicians be selected from all parts of the country to answer questions relative to issues brought before Congress, in place of depending on one individual. We hope, eventually, to clarify this matter so that workable machinery for action can be created. One reason why you may have difficulty in altering the present EMIC plan is because this machinery is not yet in working order. On the other hand, if enough interest can be created at this hearing, something may be done toward working out a coöperative plan.

Dr. J. R. Aurelius, Saint Paul: As representative of the Radiological Committee and, in the absence of Dr. Hauser of the Fracture Committee who couldn't be here, I can say that the two groups of x-ray and fracture men are unanimously in accord with the resolution.

Dr. Richdorf, Minneapolis: We would certainly like to see this machinery Dr. Adson spoke of functioning

soon. The hearing on the EMIC program is the 27th of April and there is extreme urgency about whatever we may do.

* * *

Speaker Will called on presidents of the Wisconsin and Iowa State Medical Associations.

* * *

DR. KURTEN: I believe you represent in your resolution the attitude of the Wisconsin society and we will use all of the influence we can muster to further the thought and principle back of it now and later on.

DR. WOODWARD: Our Iowa committee studying this program determined, at one time, to coöperate only until January, 1944, but later decided to extend coöperation until June 30. We are meeting in Iowa next week and I do not know what action our House of Delegates is prepared to take. But the feeling in Iowa is that this matter of fixed fees is wrong; that the fact that you must take all or none, regardless of the amount of work to be done or the preferences of the wife, is wrong. As it works out in practice, it does not give the serviceman's wife her choice of physician because physicians may refuse to participate in the program if they want to and there has been quite a little dissatisfaction among the women because they thought they were entitled to have any physician they might choose, regardless of whether the fees paid are his fees or not. I think the resolution covers the situation better than anything we have arrived at in Iowa.

DR. MOREHEAD, Owatonna: If there is no bureau in Washington to take care of this fee, I think it would be a good thing to recommend that the allotment money be handled through Dr. Wilson's office in the State Board of Health. To leave it open might mean that, the first thing we knew, there would be still another bureau operating in Washington. Also, I would recommend sending the resolution to the Central Association of Obstetricians which also has a committee which might help in this machinery mentioned by Dr. Adson.

DR. SWEETSER: In answer to Dr. Morehead's suggestion about handling allotment money, I would like to draw his attention to the paragraph of the resolution that mentions the Bureau of Allotments which now has facilities for disbursement of such funds as Congress may allocate to servicemen's families. If these women are old enough to get and handle allotments for living expenses, such as food and shelter, from the Bureau of Allotments, they should be mature enough to get an allotment through the same channel to pay their doctors.

We are taking a chance, maybe, that some of them will spend the money for something else; but even if there are no feasible safeguards to protect expenditure of such funds, we are no worse off than we were before.

* * *

It was moved, seconded and carried that the resolution be adopted.

* * *

DR. SAVAGE, Saint Paul: It seems to me the time is short and it would be appropriate for this House of Delegates to ask Dr. Adson to represent the Association at the hearing in Washington.

* * *

Dr. Adson said it would be impossible for him to do so and it was unanimously decided that a representative should be sent and that selection of the representatives should be left to the Council.

In response to the Speaker's request for new business, Dr. Burnap requested that the House of Delegates take action to coöperate with Dr. Chesley in securing information about the pay of local health officers, as the first step toward legislative action to change the schedule.

It was moved, seconded and carried that members of the House of Delegates should assist Dr. Chesley in securing this information, and also that the House of Delegates should back Dr. Chesley in all measures undertaken by the Minnesota Department of Health to control preventable disease in the state.

* * *

DR. CHESLEY: You will understand that the State Board of Health has nothing to do with the pay of health officers, which is a matter determined entirely between the doctor and the local Board of Health. But we can do nothing at all in the way of fostering a uniform improvement in fees unless we can get reports from at least 50 to 75 per cent of the medical men of the state. If we get this information, we can put it in the hands of Dr. Sogge who represents the State Sanitary Conference in the Legislature. Then, if it seems that something can be done, he will be in a position to do it.

* * *

At the request of Dr. Burnap, Dr. Chesley also repeated for the delegates, remarks about health officers made before the Council, earlier.

* * *

DR. CHESLEY: As secretary for eighteen years for the Conference of State and Provincial Health Officers, I am in a position to know something about health officers. At the present time there are twelve, I believe, who have been in state health work or as responsible heads of divisions in State Health Departments for as long as eighteen or twenty years and therefore know something about the background of the movement for what might be called the "broader aspects of the more abundant life." The others are most of them younger men, especially those who change with each governor, who know nothing about what happened before. They think the oldtimers are going into the discard and their reaction is: "What do we care what they think? We are modern and up to date and we are going ahead with proper social up lift programs."

We older men know how these things started, how they got by and where they are headed, and some of us who have old-fashioned ideas had better watch our step.

Furthermore, we must remember that money talks. The Division of Child Hygiene, for instance, receives the magnificent sum of $17,000 for its work from the state. But Dr. Wilson, the director, will probably be handling $800,000 of federal money for the EMIC program, on the basis of present appropriations. Who really owns the organization, so far as appropriations go? If we go on that way with federal allocations of money the State Legislature is going to cut its appropriations. Will we have any independence after a while? If the doctors approve of a little more money here, and an extension there, where are we going? I don't know; but some of the oldtimers are a bit concerned.

DR. SWEETSER: Isn't it true, Dr. Chesley, that the State and Provincial Health Officers insisted upon appointing their own advisory committee to the U. S. Public Health Service and the Children's Bureau and that you did not accept the advisory committee appointed by the Children's Bureau?

DR. CHESLEY: Yes and no. The situations are not identical. A few years ago, it became apparent to the organization of state and provincial health officers that they would have more effect in presenting legislation to Congress if an organization of state and territorial health officers (exclusive of Canada) was created. Accordingly, such an organization was created and committees comparable with those which served for the other organization in the Surgeon General's Conference and the Children's Bureau were appointed. The Surgeon

General accepted the committees but the Children's Bureau at first refused to do so, preferring the earlier committees, appointed in conjunction with the organization of state and provincial health authorities. Later they agreed to deal with the new committees.

DR. SWEETSER: The point seems to be that the Children's Bureau drew up this program with the advice of a committee appointed by the Bureau and so did not get the reaction of practicing physicians throughout the country or of service organizations. I believe we should look with considerable alarm at a program which is started with the advice of a committee appointed by the administration, instead of by the people who are going to be asked to carry it out.

DR. CHESLEY: The Children's Bureau wants committees for information on technical matters, of course. Our health officers' committees function entirely in relation to administrative affairs and the relation of the federal government to functions of state health departments. Perhaps Dr. Curtis can give you more information about the Children's Bureau committees.

DR. CURTIS: I would like to say that the Academy of Pediatrics made the suggestion, in connection with this program, that the Children's Bureau should have an advisory committee made up of official representatives of all the various medical groups which might be interested in the program. The recommendation was accepted and a meeting of all of these representatives was held last December, as Dr. Adson said. But for its own advisory committees, I believe the Children's Bureau would feel that it certainly had the right to appoint whatever committees it might need to carry out the program. I believe, however, that it will continue to co-operate with representatives of these various professional groups, also. There is no inconsistency between the two policies. But just as you brought out the point that the State and Territorial Health Officers should have the right to appoint their own committees so, I believe the Children's Bureau feels and has felt from the beginning that it ought to have the right to appoint its committees to assist in the work of the bureau.

ELECTION OF OFFICERS

Speaker Will then called for election of officers and the following were unanimously elected.

President-elect: E. L. Tuohy, Duluth

First Vice President: S. A. Slater, Worthington

Second Vice President: J. A. Bargen, Rochester

Secretary: B. B. Souster, Saint Paul (re-elected)

Treasurer: W. A. Condit, Minneapolis (re-elected)

Speaker of the House of Delegates: W. W. Will, Bertha (re-elected)

Vice Speaker of the House of Delegates: E. A. Meyerding, Saint Paul, (re-elected)

Councilor, First District: L. A. Buie, Rochester (re-elected)

Councilor, Second District: L. L. Sogge, Windom (re-elected)

Councilor, Ninth District: F. J. Elias, Duluth (re-elected)

Delegates to the American Medical Association: W. A. Coventry, Duluth (re-elected): A. W. Adson, Rochester (re-elected) and E. W. Hansen, Minneapolis (appointment to fill the place of J. M. Hayes confirmed).

Alternates: for Dr. Coventry, J. C. Hultkrans, Minneapolis (re-elected); for Dr. Adson, W. L. Burnap, Fergus Falls (re-elected).

It was then moved, seconded and carried that the invitation presented by Dr. Drake to hold the 1945 meeting in Saint Paul be accepted.

SPEAKER WILL: If there is no further business to come before the House of Delegates, I would like to suggest to the delegates that they report on the proceedings promptly to the component societies and that the first meeting held by the societies after this annual meeting be devoted to these reports.

The meeting adjourned at 3 p.m.

MORE DDT FINDINGS

DDT, Science's newest and deadliest blitz-weapon against insects, though known to be poisonous to man and warm-blooded animals also, is apparently safe to use when dusted dry on the skin and when breathed in air into which it has been sprayed as an insecticide. Results of two series of experiments supporting this conclusion were presented before an audience of entomologists in Washington by Dr. Herbert O. Calvery of the U. S. Food and Drug Administration and Dr. Paul A. Neal of the National Institute of Health.

Dr. Calvery's nutshell summation was: "In solid form DDT applied topically to the skin is nonirritating, nonsensitizing and not appreciably absorbed. In solution, either in oil or in organic solvent, it does readily penetrate the skin, is very mildly irritating and a very mild sensitizing agent."

Dr. Neal corroborated his colleague's verdict so far as safety in use as a dry delousing powder is concerned, and added that spray or aerosol solutions containing 1 per cent of DDT were breathed for long periods by rabbits without any tangible ill effects

Furthermore, he said, "In a clinical and laboratory study of three men who had had several months' continuous occupational exposure to DDT in its various forms as an insecticide, an evaluation of the results failed to indicate any definite toxic effects."

Both Dr. Calvery and Dr. Neal reported that in their independently conducted investigations they found considerable differences among laboratory animals in susceptibility to DDT poisoning. Mice were more susceptible than rats, guinea pigs and rabbits, with monkeys and dogs most resistant.

When relatively large doses (well above ordinary insecticide levels) were absorbed through the skin or swallowed, symptoms of poisoning began to be evident. They were principally tremors, a "jumpiness" resembling that of strychnine poisoning, and convulsions ending in death. Autopsies disclosed fatty degeneration of liver and kidneys, or changes in nerve structure.

Dr. Neal concluded that although DDT need not be regarded as dangerous in ordinary insecticidal dusts or sprays, heavy contaminations of foods should be avoided.—*Science News Letter,* November 11, 1944.



In Memoriam

JAMES EDDY ARNOLD

Dr. James E. Arnold, chief of the emergency receiving ward of the General Hospital, Minneapolis, since July 1, 1944, died of a coronary attack July 17, 1944, at the age of fifty-four.

Doctor Arnold was born at Miles City, Montana, June 26, 1890. He attended the University of Chicago and Valparaiso University, Indiana, and obtained his M.D. from Rush Medical College in 1917.

He practiced at Eveleth, Minnesota, from 1919 to 1921, at Vernon Center and Mapleton, from 1922 to 1928, at Miles City, Montana, from 1928 to 1937, and at Mountain Iron, Minnesota, from 1938 to 1943, when he moved to Minneapolis.

* * *

GEORGE WILLIS BASS

Dr. George W. Bass, Minneapolis, died September 14, 1944, at the age of eighty-six.

Doctor Bass was born at Underhill, Vermont, October 13, 1858. He attended the Underhill Academy, Barre Academy, and Essex Classical Institute. In 1881, he received his medical degree from the Medical Department of the University of Vermont at Burlington and took additional work at the New York Postgraduate School. He practiced at McIndoes Falls, Vermont, from 1881 to 1885. He then moved to Minneapolis, where he opened an office at Washington and Fourth Avenues. Later his office was located in the old Eastman Block at Fourth and Nicollet, but he maintained an office for forty years at 929 West Broadway.

Doctor Bass married Nellie Castle in Burlington in 1887. Following her death in 1941, he married Mrs. Fannie Wingate Hill.

He was secretary of the Hennepin County Medical Society from 1889 to 1892, and vice president from 1892 to 1893.

In 1942, Doctor Bass was elected to the "50 club" of the Minnesota State Medical Association, having practiced for fifty years.

He is survived by a son, Frank Castle Bass, a faculty member of the Northwestern Bible School of Minneapolis.

* * *

GEORGE F. EUBANKS

Lt. Col. George F. Eubanks, former fellow in surgery of the Mayo foundation, died September 25, 1944, at a station hospital somewhere in southern England.

Lt. Col. Eubanks was born June 2, 1900, in Atlanta, Georgia. He received the degree of M.D. in 1925 from Emory University and was an intern at Wesley Hospital, Atlanta, from July, 1925, to July, 1926. He entered the Mayo Foundation in 1926 and left in 1929, at which time he became chief resident physician

(Continued on page 952)

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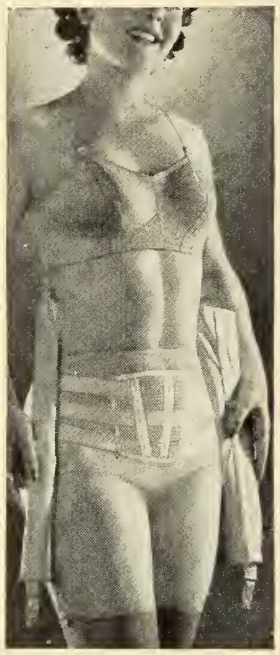
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at Knoxville General Hospital, Knoxville, Tennessee. Later he went to Atlanta, Georgia, where he practiced surgery and proctology. He was attending proctologist at the Grady Municipal Hospital and the Georgia Baptist Hospital and associate surgeon at the Albert Steiner Memorial Cancer Clinic.

He was a fellow of the American Medical Association and a member of the American Proctologic Society, the Southeastern Surgical Congress and the Southern Medical Association.

* * *

WILLIAM R. KING

Dr. William R. King, a former resident of Eveleth, Minnesota, died at his home in Minneapolis, August 10, 1944.

Doctor King was born at Chatfield, Minnesota, December 22, 1889, and grew up in Chippewa Falls, Wisconsin. He graduated from Harvard Medical School in 1917.

He is survived by his wife; two sons, Lieutenant Robert King in the bomber service and Richard; two daughters, Mrs. Harold G. Nelson and Mrs. Forrest Hales, both of Minneapolis; one brother, Dr. George L. King, of Saint Paul, and a sister, Mrs. Earl A. Hadley of Proctor, Minnesota.

* * *

JAMES MOORHEAD MURDOCH

Word has been received of the death on October 8, 1944, of Dr. James M. Murdoch at Pittsburgh, where he had lived since his retirement as Superintendent of the Minnesota School for the Feeble-Minded at Faribault in 1937. He was seventy-five years old.

Doctor Murdoch graduated from the University of Pittsburgh School of Medicine in 1892, and became superintendent of the Dixmont Pennsylvania Hospital for the Insane. For thirty years he was superintendent of the Pennsylvania State Institution for the Feeble-Minded before coming to Faribault.

He was a former member of the Rice County Medical Society and was a former president of the American Association on Mental Deficiency. He had a wide acquaintance in Minnesota.

* * *

RALPH G. MILLS

Ralph G. Mills, former associate in pathologic anatomy and professor of pathology, The Mayo Foundation, died October 17, 1944, at Decatur, Illinois.

Dr. Mills was born March 4, 1881, in Lincoln, Illinois. He received the degree of A.B. in 1903 from the University of Illinois, M.D. cum laude in 1907 from Northwestern University and was an intern at St. Luke's Hospital, Chicago, from 1907 to 1908. He was engaged in building Kennedy Hospital, Kangkai, Korea, of which he was head, from 1908 to 1912; was a graduate student at the University of Chicago during 1912 and 1913; was professor of pathology and bacteriology and in charge of the clinical laboratories and research department, Severance Union Medical College, Seoul, Korea, from 1913 to 1918; was head of the de-

partment of pathology in Peking Union Medical College from 1918 to 1925; was instructor in pathology at Johns Hopkins University from 1919 to 1920, and was professor of pathology at the University of Colorado School of Medicine from 1925 to 1926. He entered the Mayo Clinic as associate in pathologic anatomy and professor of pathology, The Mayo Foundation, on June 1, 1925, and left in October, 1929. At the time of his death he was practicing in Decatur, Illinois.

He was a fellow of the American Medical Association, a member of the American Association of Pathologists and Bacteriologists and the Wisconsin Academy of Science.

* * *

ALBERT THOMPSON

Dr. Albert Thompson of Saint James, Minnesota, died March 10, 1944, at the age of seventy-one.

Doctor Thompson was born April 22, 1872, at Sacred Heart, Minnesota. He obtained his B.A. degree from Gustavus Adolphus College, Saint Peter, in 1899, and his M.D. degree from the University of Minnesota in 1905.

He was president of the school board in Saint James for twenty-one years, acted as coroner at one time, and was local surgeon for the Milwaukee Railroad.

Most of the tuberculous patients, who seek medical aid today have had many reinoculations with many resultant foci of varying degrees of severity. The best that clinicians can do in a short course of treatment in such a chronic disease is to secure a truce between the patient and his bacilli, a truce which may be broken on either side: by the bacilli if their environment becomes congenial for their growth and multiplication; by the patient if he can increase his resistance sufficiently, maintain it at a high level, and thus prevent the bacilli from further activity.

Here is where we are making one of our most abject failures in treating tuberculosis. Both physicians and patients are prone to lose interest; and treatment is often interrupted before healing has been attained. By relaxing measures necessary to complete healing, the patient's defensive powers are allowed to lower, the tissues lose their resistance and new activity starts. Thus are caused the many relapses which plague us and make us almost lose confidence in therapeutic measures. A little longer treatment and a great deal longer extension of the careful life after treatment has been finished, and a full rehabilitation of the patient before he is discharged from observation, and many of the reactivations which we speak of as "breakdowns" would be avoided and many sources of infection would be permanently instead of temporarily eliminated.—F. M. Pottenger, M.D., *American Review of Tuberculosis,* August, 1944.



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MRS. ANTHONY J. BIANCO, *President*
Duluth, Minnesota
MRS. ROYAL V. SHERMAN, *Editor*
Red Wing, Minnesota

PRESIDENT'S GREETING

Dear Auxiliary Members:

As I reflect on the year that lies ahead, I wish to take this opportunity to extend a welcome and greeting to all Auxiliary members. I am grateful for the opportunity the year will afford me to know each of you better, and to benefit by your friendship and advice.

The war is a challenge to all of us—and we must not use it as an excuse for letting things go. We must stand ready at all times to help safeguard the Medical Profession. We must not slacken in our work. We must organize and stay organized—so that ground gained in the past will not be lost. We as Doctors' wives, should accept the tasks that lie ahead gratefully, and we should see to it that every member is a well-informed active member of her auxiliary.

Let us not forget the primary purpose of our coming into existence: To promote FRIENDSHIP among Physicians' families. Let us strive this year to make "Friendliness" one of our prime objectives. Let us all try to make our Auxiliary a real friendly organization. I should like to close with a definition of an ideal Auxiliary:

WHAT IS AN AUXILIARY?

A place where kindly thought is cherished,
Where high ideals are fed and nourished—
Where CHARITY and all its beauty
Are held to be a sacred duty,
Where PEACE and HARMONY abound
And members meet on common ground.

Most sincerely,
AMY WALSH BIANCO

STATE BOARD

The Woman's Auxiliary of the Minnesota State Medical Association held its fall board meeting October 13, in Saint Paul, at the Saint Paul Hotel.

Mrs. Anthony Bianco, State President, gave a splendid report on the National Convention. Mrs. Bianco brought news from the National Convention and commended Minnesota on being one of two states that succeeded in providing their quota for recruiting nurses. This is one of the major projects of the Minnesota State Auxiliary and included recruitment of Cadet Nurses and nurses for the armed forces. Mrs. Bianco emphasized the necessity of presenting to the laity the true facts concerning the Wagner-Murray-Dingell Bill.

Chairmen of the committees outlined their plans for the coming year and reports were given by the County presidents.

The nominating committee for 1945 was elected with Mrs. Lloyd Dack of Saint Paul serving as chairman.

At the luncheon which followed the meeting, John Doyle, Probation Officer for Juvenile Court of Saint Paul, spoke on "Juvenile Delinquency."

(Continued on Page 956)



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As one gynecologist[1] stated, at the conclusion of a study involving more than 2,300 cases of all types (many of whom employed Tampax over extended periods): "The patient does not even know that a tampon is present in the vagina if it is inserted sufficiently deep." He continued, "Many say they can forget that they are menstruating and so are without the disturbing annoyance they had every time they menstruated."

A general practitioner[2], after studying 21 patients, remarked: "All patients were favorably impressed after using the tampons. Some said that they eliminated the chafing and itching caused by the usual external pads. Some said that they eliminated a 'wet feeling' or 'unpleasant odor'. Others preferred them because they could indulge in sports with greater freedom."

And another specialist[3], after observing 110 women (both single and married) who employed vaginal tampons throughout each period for from 1 to 2 years, reported that "because of the greater comfort experienced, 103 subjects preferred to continue to use the tampons through part or all of the menstrual period rather than to return to the use of the perineal pad alone."

Such opinions reflect the reactions of thousands of women in all walks of life who have experienced the advantages inherent in the Tampax method of menstrual hygiene.

(1) West. J. Surg., Obst. & Gyn., 51:150, 1943.
(2) Clin. Med. & Surg., 46:327, 1939.
(3) Am. J. Obst. & Gyn., 46:259, 1943.

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MOWER COUNTY

The Woman's Auxiliary to the Mower County Medical Society held its first meeting of the year Monday, September 26, 1944, at the home of Mrs. C. L. Sheedy, State Finance Chairman. A 1:30 dessert luncheon was served, followed by a social afternoon.

In Memoriam

Mrs. O. H. Hegge died September 30, 1944, at her home in Austin, Minnesota. Mrs. Hegge was an early member of the Woman's Auxiliary of Mower County, and also of the State Auxiliary. She continued to take an active interest in the activities of the various programs of the society up to the time of her death.

Mrs. Hegge was the daughter of Mr. and Mrs. Seymour Johnson, pioneer family of Austin. She is survived by her husband, Dr. O. H. Hegge, a son, Dr. Rolv Hegge of Austin, and Mrs. Theodore Heimarck, daughter, of Red Wing.

WASHINGTON COUNTY

The Washington County Auxiliary meeting was held at the home of Dr. and Mrs. J. H. Haines in Stillwater in September. Mrs. R. J. Josewski, president, presided at the meeting, and plans were made for the coming year. Following the meeting a social time was enjoyed, with members honoring Dr. and Mrs. Haines on their 45th wedding anniversary.

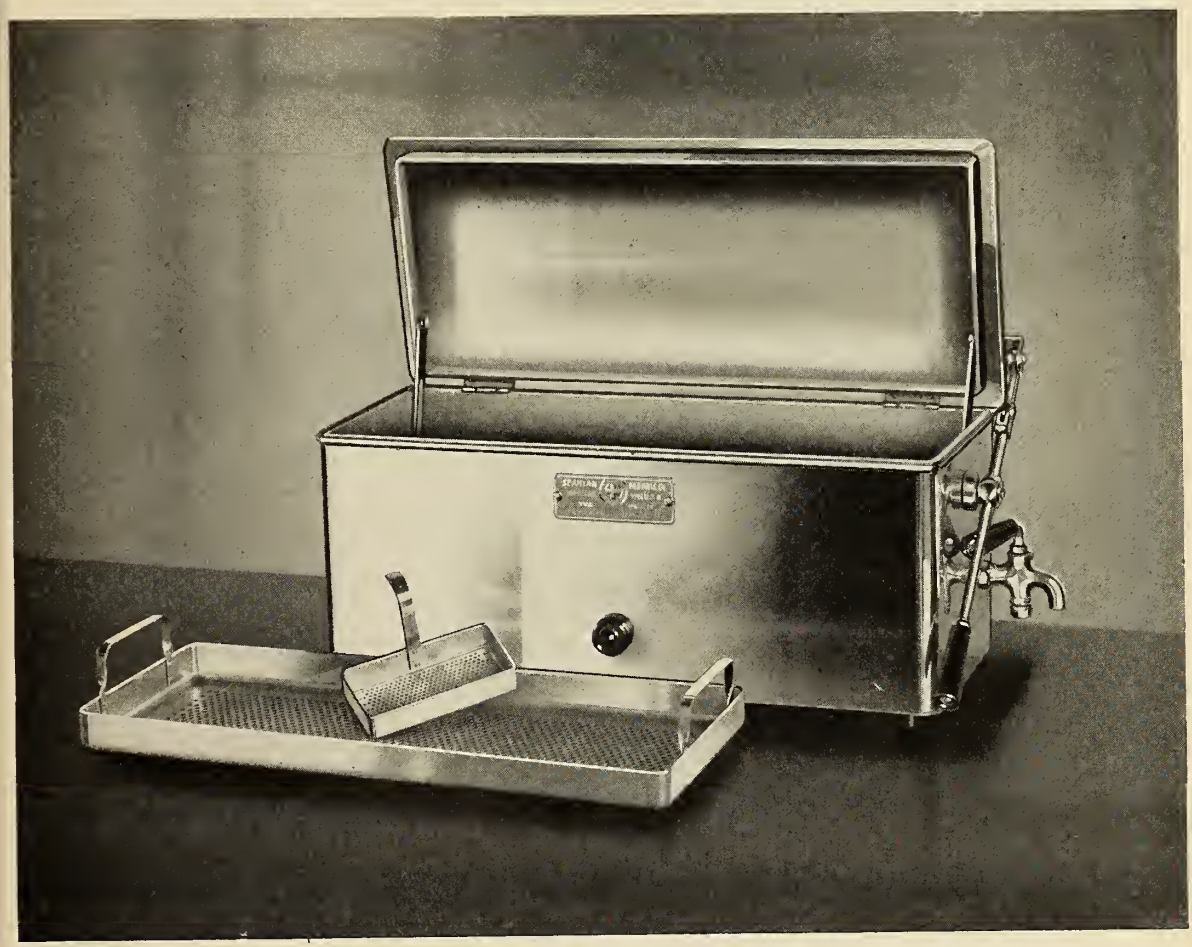
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✦ Reports and Announcements ✦

MEDICAL BROADCAST FOR NOVEMBER

The following radio schedule of talks on medical and dental subjects by William A. O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, Minnesota Hospital Association and University of Minnesota School of the Air:

Nov. 1—11:00 a.m.	(WLB)	Exercise and Play
Nov. 4— 9:15 a.m.	(WCCO)	Cause of Mental Illness
Nov. 4—11:30 a.m.	(WLB-KROC)	Medicine in the News
Nov. 8—11:00 a.m.	(WLB)	Care of Skin and Hair
Nov. 11— 9:15 a.m.	(WCCO)	Measurement of Personality
Nov. 11—11:30 a.m.	(WLB-KROC)	Medicine in the News
Nov. 15—11:00 a.m.	(WLB)	Common Skin Disorders
Nov. 18— 9:15 a.m.	(WCCO)	Psychosomatic Medicine
Nov. 18—11:30 a.m.	(WLB-KROC)	Medicine in the News
Nov. 22—11:00 a.m.	(WLB)	Clothing and Health
Nov. 25— 9:15 a.m.	(WCCO)	Fluorine and Dental Caries
Nov. 25—11:30 a.m.	(WLB-KROC)	Medicine in the News
Nov. 27— 4:15 p.m.	(WCCO)	Your Hospital in Wartime—Subject to be announced.
Nov. 29—11:00 a.m.	(WLB)	Good Air vs. Bad Air

FORUM ON ALLERGY

The seventh annual Forum on Allergy will be held in the Hotel William Penn, Pittsburgh, Pennsylvania, on Saturday and Sunday, January 20-21, 1945.

This international postgraduate society was founded in 1938, at Cincinnati, Ohio, to provide intensive postgraduate instruction in allergy for physicians in various fields. Reputable physicians are welcome to enroll in two of the twelve study groups.

This year the Marcelle prize has been established through the generosity of Marcelle Cosmetics, Inc., which will be given to the author of the best paper on allergy appearing in American medical literature during the year.

For further information, write Jonathan Forman, M.D., Director, 956 Bryden Road, Columbus 5, Ohio.

WABASHA COUNTY

The seventy-sixth annual meeting of the Wabasha County Medical Society was held at Wabasha, Thursday afternoon and evening, October 5, 1944.

At the business session, the following officers were elected to serve for one year: President, C. G. Ochsner, M.D., Wabasha; Vice President, E. W. Ellis, M.D., Elgin; Secretary-Treasurer, W. F. Wilson, M.D., Lake City; Delegate to State Association, E. C. Bayley, M.D., Lake City; Alternate, B. J. Bouquet, M.D., Wabasha; Censor for three years, R. A. Glabe, M.D., Plainview; Censors continuing in office, D. G. Mahle, M.D., Plainview and W. J. Cochrane, M.D., Lake City.

Dinner was served at the Hotel Anderson through the courtesy of the Wabasha members, following which the scientific program was presented:

President's Address—E. C. Bayley, M.D., Lake City.

(1) "Report of a Case of Loeffler's Syndrome."

(2 Delegate's report.

"Intra-abdominal Pregnancy" (Case Report)—C. G. Ochsner, M.D., Wabasha.

"Medicine in Minnesota Fifty-Six Years Ago." Review of the *Northwestern Lancet* of March 15, 1888—W. F. Wilson, M.D., Lake City.

"Chronic Recurring Sciatica and Its Surgical Management." (Illustrated with lantern slides and a motion film)—A. W. Adson, M.D., Mayo Clinic, Rochester.

At the conclusion of his scientific address, upon request, Doctor Adson reported on the activities of the Council on Medical Service and Public Relations of the American Medical Association.

There were twenty-six in attendance—doctors and accompanying ladies. The ladies were entertained at the home of Dr. and Mrs. G. C. Ochsner in the evening.

WASHINGTON COUNTY

At the regular monthly meeting of the Washington County Medical Society on October 10, E. M. Hammes, M.D., of Saint Paul, counsellor for the fifth district, met with the Society. He addressed the meeting on the subject of a postwar medical service and outlined what the state survey, now nearly completed, indicated the necessary adjustments to be made for satisfactory medical requirements throughout the state. He also spoke of the difficulties which would be encountered by the doctors now in service when they return to private practice and their medical re-education for same. They will come back with wonderful experiences but will find themselves out of tune with conditions in peacetime. Tuberculin testing in this county is now under way.

We are indebted to Dr. Hammes for a very enjoyable evening.

PSYCHOLOGISTS IN ARMY MAY OBTAIN COMMISSIONS

Psychologists serving in the Army as enlisted men are now offered an opportunity to obtain commissions as second lieutenants, upon applications made through their immediate commanding officers. Those considered qualified include those whose professional training and experience ranged from psychological testing and counselling to teaching in colleges and caring for mentally and physically handicapped cases.

Minimum education requirements are a bachelor's degree in psychology, sociology, or educational or industrial psychology.—*Science News Letter,* November 11, 1944.

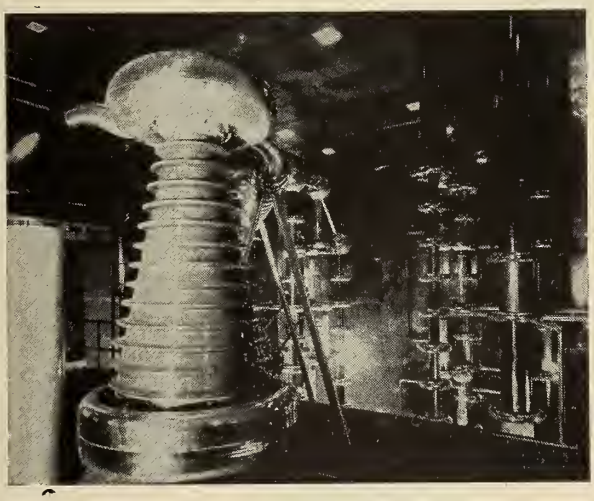


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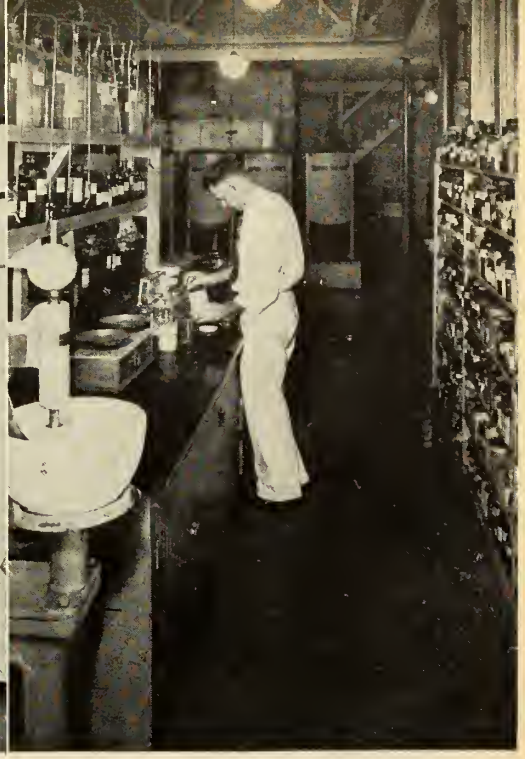
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Of General Interest

Dr. Harry Wilmer, of Minneapolis, was married on October 31, to Miss Jane Harris, daughter of Mr. and Mrs. Charles Harris, of Saint Paul.

* * *

Dr. Charles A. Aldrich, of Rochester, was elected president of the American Pediatric Society at the annual meeting held in Atlantic City this fall.

* * *

Captain John Earl, Saint Paul, is at present Chief of the Surgical Division of the 29th Station Hospital in North Africa.

* * *

Captain M. E. Janssen has been seeing plenty of action in North Burma. He recently has been getting a brief respite from action in India.

* * *

Dr. Harry Weber, of the Mayo Clinic, was made a member of the Executive Council of the American Roentgen Ray Society at their October, 1944, convention held in Chicago.

* * *

Dr. James M. Hayes, formerly of Minneapolis, and now located in Los Angeles, has been appointed Consulting Surgeon at the Santa Fe Hospital in Los Angeles.

Dr. Philip A. Klieger is now physician in charge of the Indian Hospital at Cass Lake, Minnesota. Dr. Klieger has been in the service in Oklahoma prior to his Cass Lake appointment.

* * *

Dr. Norman A. Wagner, who since his graduation from the University of Iowa in 1940, has been serving in the United States Coast Guard, has joined the Oliver Clinic in Graceville, Minnesota.

* * *

Dr. Peter D. Ward, superintendent of Miller Hospital, Saint Paul, was chosen president-elect of the American Hospital Association at the annual convention in Cleveland, Ohio. Dr. Ward will assume the post next year.

* * *

Dr. R. M. Hewitt, of Rochester, represented his alma mater, George Washington University, Washington, D. C., at the inauguration of Dr. Clemens Matthew Granskou as president of St. Olaf College in Northfield, Minnesota, on October 14, 1944.

* * *

Dr. Miland E. Knapp, clinical assistant professor of radiology and physical therapy at the University of Minnesota Hospitals was elected president of the American Congress of Physical Therapy at the annual meeting of the organization held recently at Cleveland.



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Dr. Theodore Bratrud was the speaker at the meeting of the Minnesota Pathological Society, of the University of Minnesota, held in the Medical Science Amphitheater on October 24. His subject was "Tumors and Hyperplasia of the Adrenal Glands."

* * *

Dr. W. F. Maertz, who has been in practice in New Prague, Minnesota, for many years, has opened offices in Saint Paul, where, with Mrs. Maertz, he expects to reside permanently. He is now occupying the offices of his son-in-law, Dr. C. W. Cain at 474 Hamline Avenue South.

* * *

Dr. Peter Ward, Superintendent of the Miller Hospital, Saint Paul, was elected president-elect of the American Hospital Association at its annual meeting in Cleveland, October 5, 1944. Doctor Ward follows Dr. Donald Schmelzer, a former superintendent of the Miller Hospital.

* * *

Dr. Sidney Miller, a Fellow in Mericine at the Mayo Foundation since July, 1942, has been ordered to active duty and commissioned a First Lieutenant in the Army Medical Corps. Dr. Miller graduated from Johns Hopkins in 1940 and interned at Harper Hospital in Detroit, Michigan.

* * *

Dr. Thayer Davis, of the Davis Clinic in Wadena, Minnesota, was a victim of one of the first accidents of the hunting season. While out after ducks near Almora, Dr. Davis's gun exploded, injuring his left hand so that it was necessary to amputate the third and fourth fingers.

* * *

Dr. Gordon B. New of Rochester was elected president of the American Academy of Ophthalmology and Otolaryngology at the annual meeting of this organization on October 12 in Chicago. Dr. William L. Benedict also of Rochester was elected executive secretary-treasurer, and Dr. Erling W. Hansen of Minneapolis was chosen to have charge of public relations.

* * *

Dr. Thomas Krezowski, Jr., was the guest of honor at a farewell party at the home of his sister, Mrs. Harold Hallin, in East Minneapolis, before leaving recently to start his internship at the County Hospital in Milwaukee, Wisconsin. Dr. Krezowski, a graduate of the Minnesota School of Medicine, was commissioned a First Lieutenant in the United States Army on August 24.

* * *

Dr. R. H. Picha, of Hopkins, Minnesota, closed his office on October 28 in order to report for military service at Carlisle Barracks, Pennsylvania, on November 15. After six weeks' training he will be transferred to Lawson General Hospital in Georgia. Dr. Picha applied for a commission in the army medical corps in September, 1942, but was rejected for a minor physical defect which has since been corrected.

* * *

Dr. Lauritz S. Ylvisaker, of New York City, an authority on cardiovascular diseases, has been made vice president and medical director of the Fidelity Mutual

Life Insurance Company in Philadelphia. Dr. Ylvisaker is well known in the Twin Cities, where he was in private practice for some years. During World War I he was resident physician at both the University of Minnesota and the Minneapolis General hospitals.

* * *

"Wartime Radiology and Peacetime Problems" was the subject of an address given by Colonel B. R. Kirklin at the joint meeting of the American Roentgen Ray Society and the Radiological Society of North America held in Chicago the latter part of September. Colonel Kirklin, who comes from Rochester, attended the gathering as personal representative of the Surgeon General of the United States Army.

* * *

Commander Edward D. Anderson, former Minneapolis pediatrician, now stationed at Parris Island, South Carolina, after almost two years of overseas duty, was Navy Day speaker at the exercises held at Northrop Memorial Stadium. In an interview Commander Anderson said that one of the most surprising medical angles of the war is the remarkable work done by young doctors without previous practical experience.

* * *

Announcement has been made of the engagement of Jean Margaret Legler, daughter of Mr. and Mrs. Frederick W. Legler, of Minneapolis, to Dr. Bradley W. Kusske, son of Dr. and Mrs. A. L. Kusske, of New Ulm. Dr. Kusske, who is a graduate of the medical school at the University of Minnesota, is now serving his internship at St. Joseph's Hospital in Saint Paul. A First Lieutenant in the medical reserves, Dr. Kusske will report for active duty next July.

* * *

Dr. Stanley R. Maxeiner of Minneapolis talked on the subject of "Applied Local Anesthesia" at the meeting of the Chippewa County Medical Society, Eau Claire, Wisconsin, Tuesday, October 31. On December 1 he will present a paper at the meeting of the Western Surgical Association in Chicago on "Hyperinsulinism Due to Islet Tumors of the Pancreas," with a report of a patient on whom a 70 per cent resection of the pancreas was done with removal of eight islet tumors.

* * *

Lt. W. H. Johansen, MC, USNR, who reported for service October 18, 1943, was assigned to overseas duty a week later and has since been in the Southwest Pacific. Since March 1, 1944, he has been on a landing ship for invasion troops under the command of General McArthur and was in the recent invasion in the Philippines. He has seen several Minnesota physicians at the various points of landing, among them Capt. J. Lawrence Noble, Lt. Raymond Cochrane and Lt. Comdr. C. H. Mattson.

* * *

Dr. Nina Augusta Anderson, daughter of Mrs. John A. Anderson, Saint Paul, Minnesota, was married to Lt. Commander Harry Thomas Atkins, Medical Corps, United States Naval Reserve, in Germantown, Pennsylvania, on October 7. Dr. Anderson, who is a graduate of the University of Minnesota, is assistant professor of pediatrics at Temple University School of Medicine in Philadelphia. Commander Atkins is a graduate



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of Princeton University and the University of Cincinnati Medical School. He enlisted as a surgeon in the Navy in June, 1941.

* * *

Out of respect to and in view of the great interest endocrinology manifested by the late Dr. Max H. Hoffman, a group of his friends have established The Dr. Max H. Hoffman Memorial Fund, the purpose of which will be to continue research work in this field. Administration will be in the hands of the Dean of the University of Minnesota Medical School and head of the Internal Medicine Department of the School, and two physicians to be selected later. It is hoped that a minimum of $10,000 can be raised so that both a lectureship and a fellowship can be undertaken.

Contributions, which are tax exempt, should be sent to the Dr. Max H. Hoffman Memorial Fund, C. T. Hagman, Treasurer, First National Bank, Saint Paul 1, Minnesota.

* * *

Announcement has been made by Colonel W. C. Saffarrans, United States Infantry and commandant of a unit jungle training center in the South Pacific, of the award of a Legion of Merit Medal to Captain Herbert R. Gore, who was killed in a plane crash somewhere in the Solomon Islands. Captain Gore, who was in line for promotion when his death occurred, was in medical practice in Rochester, Minnesota, from 1939 until he entered the service in February, 1943. The medal was awarded for "developing ways and means of caring for the wounded under the most adverse conditions which resulted in the saving of many lives in combat."

* * *

Dr. E. C. Rosenow, who has gone to Pasadena, California, to engage in experimental work at the California Institute of Technology, was honored with a dinner before his departure given by his associates at the Mayo Foundation and Clinic in Rochester. The toastmaster was Dr. A. H. Sanford. The other speakers were Dr. D. C. Balfour, director of the Mayo Foundation, Dr. R. D. Mussey, chairman of the board of governors of the Mayo Clinic, and Dr. J. L. Bollman, who represented the laboratory society. Dr. Rosenow was presented with a medallion picturing Drs. W. J. and C. H. Mayo, pictures of the members of the laboratory society and a scroll signed by all the members.

* * *

Captain William E. Wellman, formerly of Lake City, Minnesota, who returned to this country last May after nine months of overseas duty, has been especially commended by Major General Frederick Gilbreath, commander of medical work in the South Pacific, for his studies in filariasis in the South Pacific, dealing with causes, prevention, and early diagnosis. The citation reads in part: "As a result of your efforts, two vital works were produced which have a profound effect on the care of patients afflicted with the ailment. Unquestionably, you have contributed materially to the battle efficiency of American troops in this theater of operations." Captain Wellman has been in service since December, 1941, and is now stationed at the O'Reilly General Hospital in Springfield, Missouri.

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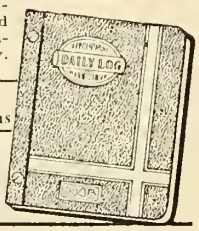


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THE SIGNIFICANCE OF RHEUMATIC FEVER TO THE COMMUNITY

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RHEUMATIC fever continues to be one of the important diseases which remains unsolved in most of its public health aspects. It is one of the common diseases which affects the general public, and which occurs in all communities and all walks of life. It occurs most frequently in young people, although the effects on the heart may be crippling and last for years into adult life, or the after-effects on the heart may be recognized only in later years. During the past hundred years the disease has been more and more clearly differentiated from other forms of rheumatism and the special features seen in children were accurately described more than fifty years ago by the English physician, Cheadle. During this time the greatest interest of the medical profession has been centered chiefly on the after-effects on the heart and most of the emphasis has been placed on this phase of the disease, studying the nature of these after-effects, what might be done about them in the way of relieving the individual patients, and at times wondering what might be done about the initial onset of rheumatic fever. A great deal of effort has been spent by many workers to establish the cause of this infection, but little or no real progress has been made in this direction. It is generally believed that there is some relationship between rheumatic fever and streptococcal respiratory infections. It is agreed that the discovery of the etiology will be most important and that work must be continued in that direction. However, there are many other points which have been added to our basic knowledge and, in time, the application of this knowledge will be useful in reducing the extent and severity of the disease. Very little has been learned in the field of preventive medicine that can be of much use for the individual person who acquires rheumatic fever and, in this respect, we must continue to do the best we know, which is little more than what was known to, and practiced by, the earlier physicians. But in the field of public health, great advances have been made and much can be accomplished, provided certain measures can be carried out for the whole community which result in real protection for the individual. This same situation is equally true for several other important diseases; for example, tuberculosis and infantile paralysis in which, in each case, the cause of the disease and the way in which it is spread is now well known, but where no specific form of treatment exists with which the individual patient may be relieved.

Incidence.—It is difficult to determine whether the incidence of rheumatic fever is increasing or decreasing. More and more young people seem to be reporting with the disease, but the actual rate of increase is not easy to bring under accurate statistical analysis. The disease is not reportable in all communities; and such surveys as have been made are limited in scope, have

From the Department of Pediatrics, Washington University, School of Medicine, and the St. Louis Children's Hospital. Read before the Minnesota State Medical Association, Rochester, Minnesota, April 14, 1944, as a guest speaker representing the Northwestern Pediatric Society.

been applied to specially-selected groups, and are indirect in the source of figures. Also, the public is more aware of the meaning and dangers of rheumatic fever and, no doubt, many children are reporting for examination and care. Physicians are more and more alert to recognize borderline cases, especially those occurring in early childhood and in sections of the country where, heretofore, the disease was thought to be infrequent. It seems evident now that in many large areas where the disease has a low incidence, many subclinical cases have not been recognized either because the symptoms were so mild that they could not be classed as rheumatic fever, or the disease had such a mild course that little or no effect on the heart resulted and the cases were missed. Whenever careful search has been made in those areas by workers familiar with the mild and protean symptoms, many more cases have been found before heart disease has resulted. Epidemiologic studies must differentiate between the attack rate for rheumatic fever and the incidence of heart disease. Again, studies have shown that a similar situation exists for infantile paralysis. The number of cases with permanent residual muscle paralysis is very low in comparison to the number of individuals who have demonstrable reactions indicating previous invasion by the virus endemically or during an epidemic. Improved school health services have uncovered many children with rheumatic fever who would otherwise be missed. All these factors, therefore, tend to increase the case and attack rate in any community. As far as we know, too, the secondary factors which enter into the etiology of the disease continue as before. Some are probably on the increase, together with several other new factors of this same class which have appeared and tend to increase the rate of incidence. Whether the disease is increasing is important, but the fact that more and more patients are coming in for care, and the load on medical facilities and community care and responsibility is increasing, places a greater responsibility on the medical profession and community agencies to care for these individuals with rheumatic fever.

Relation to Growth.—One characteristic of rheumatic fever has been the fact that initial attacks occur only in young people before complete biologic and physiologic maturity has been reached. The peak of incidence is during the semi-decade from 10 to 15 years with a rapid rise in rate before those years and a rapid fall after the same period. This is the period of life when the growth process is evolutionary and progressive. Other forms of arthritis are rare during this same time, and those that do occur are rarely associated with heart disease or other changes in body tissue similar to rheumatic fever. This is strongly suggestive that there may be some relation between rheumatic fever and the growth process. Either the sensitivity of body tissue to the streptococcus may be altered materially or the cell metabolism may be disturbed. Stroptococcal infection during other periods and during the same period in nonrheumatic subjects do not produce attacks of rheumatic fever. This same phenomenon may account for the confusion which has existed in respect to tuberculosis. For many years childhood tuberculosis has been confused with first infection types of tuberculosis. While it is true that the course of tuberculosis is strongly modified by the age of first infection, the first attack is generally similar at any age, making due allowance for the type of tissue in which the lesion occurs. The relationship of these and other diseases to the growth process is therefore of great pediatric importance and the subject is one for research examination.

Public Health Approach.—Probably the most important and hopeful trend at present is the shift of interest from the care of the person sick with rheumatic heart disease, with its crippling and often fatal effects, where it has been placed for so long, to the public health aspects of prevention of rheumatic fever in general. Especially important is the early recognition during childhood of first attacks of rheumatic fever long before the heart has been injured and even, in many instances, in changing the situation in a rheumatic family so that even first attacks may be prevented altogether. These public health aspects then result in the most effective form of preventive measures. It is still a medical problem to provide intelligent, constructive care for patients who have had rheumatic heart disease recently or still have old chronic crippling hearts with muscle and valve damage. These patients are numerous and many of them live for years fairly comfortably, but their efficiency is reduced and their care is an economic loss and liability. But if a community can manage to pro-

ide better socio-economic conditions for its citzens through improved housing and an opportunity for more healthful outdoor activities; less rowding and an intelligent consciousness of good utrition; good public health control of communicable disease, particularly streptococcal respiratory colds and sore throats, with facilities for careful examination of children suspected of having heumatic fever; then the rate will surely decrease substantially and effectively. This has been accomplished to a great degree in the case of tuberculosis control, and a more thorough pplication of these principles will reduce further the tuberculosis rate as well as the rheumatic ever rate.

Two factors may be described which have contributed in recent years to an increase in the ate of rheumatic fever. Both these factors continue in force and have become much more important. One is the migration of larger numbers of people from one community and one ection of the country to another, particularly rom the southern sections to the north (and n this case this has great importance to the negro ace, for a long time considered more or less free of rheumatic fever), and from rural sparsely settled regions to the urban thickly settled centers where many of the secondary factors in the occurrence of rheumatic fever are poorly controlled and are prevalent. This has been due, of course, to the automobile and to changes in industrial employment. The second factor has been he war with all the changes in population centers incidental to this situation. In every instance he living conditions prevailing in many cities nd industrial or war centers have become congested and in many cities have resulted in a lowering of facilities for housing, a shortage of [food supplies] especially essential foods, crowding in schools and various conditions taxing every public health facility to the utmost, and maybe resulting in lowering of adequate care in general. Individuals who are susceptible to the disease have moved into the areas in which the infection prevails and have promptly shown first attacks. These individuals have been not only members of the armed services in training centers but members of their families as well, and others centered in war industry areas.

Proposed Effective Control Measures.—What can be done to offset these trends and to control the disease? One can mention procedures and policies which should be considered and worked out.

1. A careful registry of known rheumatic subjects through reporting of cases with careful follow-up of these cases wherever they may go and as long as they remain active will give accurate information about the number of cases and their distribution. The purpose of this registry is not so much to serve as a case-finding method or to isolate such cases but to enable one to observe many points in the natural course of the disease where it exists. The opportunity to follow one patient from the onset of the disease into later adult life is not often possible, and yet this is most essential to a good understanding of what changes occur in patients who live and how they meet the strain of later life.

2. Adequate medical and professional care for children and young people during convalescence from respiratory infection, especially sore throats. A most effective method may be full medical examination when children report back to school or to work after being ill to see that the heart is normal, that no rheumatic symptoms are present, and that the nose and throat area is clear of infection.

3. Adequate periodic health examination of all people by physicians especially trained for this and who themselves are interested in this general phase of health, searching naturally for the common physical defects such as bad tonsils and teeth, but also for poor nutrition, poor posture, poor health habits and with an assessment of the child's growth and development, his socio-economic status and his probable susceptibility to all infections. This is not done at present in the usual health examination which is rarely more than a brief and often careless medical inspection. Unless the examination is done intelligently and constructively, its main purpose may be defeated.

4. Improvement of all phases of living conditions for people in lower economic levels by education of these individuals; by proper laws for better housing; by better food control and distribution; by establishing more and better opportunities for outdoor activities in parks and playgrounds and for easy transportation to suburban areas. It might be possible to have susceptible families change their residence to a more

favorable location in the country or in the south, either temporarily or permanently. This has been done in the army for soldiers with rheumatic fever with satisfactory results. These and other phases of this general idea come within the scope of community public health and planning. While rheumatic fever is not confined to people in low socio-economic levels, or to those who live in crowded cities, it is certainly much more frequent and severe there, and the most effective measures will be those directed at this low-privileged group. Modern knowledge of nutrition has shown that it is not so much the quantity of food, fresh air and exercise as the quality of these factors which may underlie the presence of this and other similar diseases. This means, therefore, not so much the expenditure of more money, public or private, but a more intelligent use of such funds as are already available. This is a most important viewpoint to have these days when great thought and effort is being given to the problems of providing better living conditions and health for the general population.

5. Adequate facilities must be provided for the medical care of rheumatic subjects. This should include properly-trained professional workers, such as doctors, nurses, social workers, nutritionists and others when and where rheumatic fever is prevalent. Many of these must have specialized training so they may serve in diagnostic centers. Facilities for the care of rheumatic children should include adequate supervision of the home so that attention can be given to contact children in the home, older occupants, food and sleeping, and all activities. The home situation in every instance should be appraised and evaluated in terms of what can be provided for the patient and his environment. The most important approach to the real problem of prevention of rheumatic fever is the reconstruction of living conditions in the home. Shifting of responsibility for medical care to outside institutions of any sort is at best a poor compromise in the ultimate solution of the patient's recovery. Temporary foster-homes may be arranged for the care of patients at low cost under the careful direction of recognized child-placement agencies subject to proper regulation by state and local authorities, and where foster mothers have been specially trained to care for rheumatic children and understand the problems involved such as regular health habits, directed and adequate exercise, extra rest, quiet stable emotional environment, good simple food, and education. In general, adequate beds for the care of rheumatic subjects are available in established hospitals and clinics, but there is a lack of adequately-trained personnel to manage the wards and clinics, and especially there is a lack of adequate beds in convalescent sanatorial homes and hospitals such as are available for patients with tuberculosis. There is considerable evidence to show that rheumatic subjects need not be kept in bed for such long periods. Improved methods for determining activity of rheumatic infection makes it possible to recognize accurately the termination of the period for bed rest. In this way many patients may be returned to normal physical activity sooner and with less risk. Many rheumatic children have been kept in bed for too long (to their own detriment), and are occupying space which should be available to others. There has been a tendency to use beds both in hospitals and convalescent sanatoria for patients with advanced heart disease rather than to reserve such space for the early and probably preventable stage of rheumatic fever. There are many rheumatic subjects who become severly and acutely ill who are in need of hospital beds for intensive medical care and diagnosis who can safely return to their homes after short periods. But if these beds are occupied by the chronically ill who are confined for long periods, then the turnover is very slow and the total number of patients who receive essential care is lowered.

6. Careful study is needed to rehabilitate patients who have recovered from attacks so they may be directed to useful lives and to earning a good living. This rehabilitation should start during the convalescent period after attacks, should continue through the vocational training period and be projected into the employment period. At each medical examination the patient's fitness to do his job should be given careful consideration so that adjustments and changes can be made in time. Patients must be instructed in what their future may be; what their physical limitation may be; where they may live to the best advantage; and what sort of work they are best suited for. This implies many phases and involves many agencies with the coöperation of educators, physicians, employment agencies, train-

ing centers, and industrial management. Life insurance authorities are also vitally concerned in the direction of the patients into the proper levels of activity for it can be shown that morbidity and mortality rates are substantially lowered by careful attention to these factors. Industrial health authorities can be shown that rheumatic subjects are able to produce good work without handicap and compensation when the rheumatic individual is properly adjusted to his job and environment. This is a most important conception now when many servicemen will be returning to jobs after having had rheumatic fever during their military period. These men must be restored to jobs suited for their capacity for work and this can be done effectively.

Two other medical procedures may be included for discussion which are of public health interest in the control of rheumatic fever. One of these is the relation of the incidence of rheumatic fever to bad tonsils; whether the individual case is influenced by removal of tonsils; and whether the community rate can be lowered by removal of tonsils in all children. It can be stated that rheumatic fever attacks occur whether tonsils are in or out, and that having good tonsils or no tonsils is no guaranty of freedom from rheumatic fever. It is also true that rheumatic individuals are improved when bad tonsils are removed. Whether this is directly an effect on the incidence of respiratory infections and a lowering of the subsequent rheumatic attack rate, or an indirect effect resulting from the general improvement in the child, both locally in the nose and throat with improved breathing and ventilation with greater freedom from colds, and from removal of a load of infection, is not always clear. Undoubtedly a chronically infected tonsil like any other focus of infection with recurring periods of activity, will sensitize the individual to the infection so that attacks of rheumatic fever follow one or another acute phase. One other very important phase of the problem of prevention of attacks is for the examining physician to be thoroughly familiar with the condition of the nose and throat area so that as cases are followed any change can be recognized and treatment started. This requires careful medical inspection of the area at each visit, bacteriologic cultures if necessary, examination by a nose and throat specialist in consultation, and other special techniques when the occasion arises. The nose and throat area must be put in good order and kept so at all times. The tonsils are only one part of this area and their importance as the location of the infection has been overemphasized. It may be true that infected tonsils are only the end-result of a more general infection in the nose and throat. Infection in other areas of the body may at times give rise to attacks of rheumatic fever but the principal and usual sensitizing focus is the nose and throat area. These measures are directed toward preventing and managing phase I of a rheumatic episode.

The other procedure for discussion in this same category is the use of sulfonamide drugs for control of recurring respiratory infection in rheumatic individuals. It has been shown that small doses of such drugs can be given daily (month after month) to rheumatic patients without harm, and that the number of colds and respiratory infections can be greatly reduced if not prevented. If the sensitizing attack of phase I can be prevented, then these patients do not have Phase III of rheumatic fever. Small doses of the drug are required, but it must be taken continuously and regularly during the winter season or through the whole year. Close medical supervision is necessary and, at least at present, it is not a safe procedure to give the drug to patients unless this supervision is guaranteed. Furthermore, the question will arise of using the drug in the same way for all members of the family where the rheumatic patient is housed in order to control contact infections, and further reduce the load of sensitizing infections. This procedure would be not unlike a public health attempt to control malarial infestation in a community by the administration of quinine to all inhabitants in addition to mosquito control, housing, screening, et cetera. It is also not now unreasonable to conceive of using sulfonamide drugs in the same way to control streptococcal infections in the total population.

There are three secondary phases of the problem of rheumatic fever related to the etiology of the disease which remain unsolved. One of these is the question of heredity. Susceptibility to a given disease as an inherited characteristic may be difficult to establish, and careful study through several generations in large groups is necessary. Genetic studies by May Wilson indicate definitely that there are families with more cases of rheumatic fever, living under conditions compara-

ble to other families with no cases. The high incidence rate is not explainable entirely on the basis of contact infection, and her conclusions are that there is some significant inherited genetic characteristic. In this same connection the question to constitutional type, race, et cetera, may be mentioned. At present very little is known about constitutional type in relation to any disease. But this subject is not easily examined, and the future may reveal some factor present in an individual or a group which prediposes of rheumatic fever or other conditions. Some such factor would seem to be necessary to explain the spotted incidence in any areas. This unknown factor might be readily transmissible from parent to offspring. The likelihood even now is great enough to warn rheumatic subjects not to intermarry. It can be stated that there is no fixed racial immunity or predisposition to rheumatic fever.

A second phase in the etiology of rheumatic fever which needs investigation is the relation to climate. The disease is more frequent in the north temperate zones, and in the larger urban industrial centers where crowding, long winters, cold changeable weather, and other unfavorable climatic factors exist. In recent years the high incidence rate of rheumatic fever in the Rocky Mountain states has called for further explanation, for many of these cases occur under conditions which are in no way similar to those in the New England states. Whether this is due to altitude, to lack of sunshine, or to some other climatic factor is not known. This may be the factor which could account for cases in isolated rural areas far removed from congested cities and frequent exposures to respiratory infections. It has been suggested that a high diurnal variation in temperature may be responsible. The older idea of dampness alone, and basement living as an etiologic factor does not seem true.

The third phase in the possible etiology of the disease is that the attack of rheumatic fever is a form of hypersensitivity to streptococcal infections similar in general to other forms of allergy. This idea has been suggested for a long time and has been discussed freely. There are many clinical features of the disease which justify the assumption and the idea is sound. Recurring respiratory infections in early childhood may sensitize susceptible individuals during succeeding years until under some set of circumstances, another infection called phase I may be followed through a silent phase II period into a period of rheumatic activity called phase III. This pattern of behaviour is so constant that many workers are willing to accept this general conception. Many and maybe all the morphologic tissue changes occuring in the body, including the heart, can also be explained on this basis. Many of the phenomena associated with attacks, including bacteriologic studies of cultures as well as seriologic reactions, also suggests that this is true. Allergy is a new conception of the expression of the body response to disease, and many points are not yet explained or understood, but there is promise that the future will bring a correct answer.

Two recent developments in the public health aspects of the disease should be mentioned. One, the United States Government through legislative acts of Congress has authorized grants-in-aid to rheumatic children in states through the program of services for crippled children. These programs are carried on by state and local agencies administered under the jurisdiction of the Department of Labor through the Children's Bureau as a part of the Social Security Act. The purpose of these programs is to offer aid of all types in selected areas to children who are unable to secure special medical care for lack of funds. The programs are essentially medical service to the individual but, indirectly, they are important forms of preventive medicine, and they should be valuable steps toward the control of rheumatic fever. These programs have been in operation only a few years and because of lack of sufficient funds are restricted to small areas in each of about twenty states. Undoubtedly, much will be learned from studies being carried on under these plans. Second, several interested groups have organized a Council on Rheumatic Fever under the general supervision of the American Heart Association. The constituent groups represent the medical profession, public health nurses, sociologists, and others who have a professional interest in the control of this disease. This council will be formed in a way similar to other health and medical councils, so that some coördination may be given to all the interests concerned, educational, vocational, medical, research, and otherwise. The organization of this council has been started only this year but considerable progress has been made.

A CONSIDERATION OF THE PHYSIOLOGIC ACTION OF THIO-URACIL AND OTHER GOITROGENS

GEORGE M. HIGGINS, Ph.D.
Rochester, Minnesota

THE observation that thio-urea and certain of the sulfonamide compounds induce in experimental animals a marked hyperplasia of the thyroid gland[1,2,7] has afforded a new impetus to the study of the physiology of this important endocrine gland.

A decade or more ago, students of the function of the thyroid produced in animals extreme hyperplasia of the gland by feeding the leaves of cabbage or other members of the Brassica[6,9,15,16] family. Cyanides were subsequently found to be goitrogenic.[10] Likewise soybean flour, when added to diets of experimental animals, induced enlargement of the thyroid.[14] Phenylthiocarbamide produced large hyperplastic goiters.[12] All of these substances interfered in some way with the metabolism of iodine and the thyroid response occurred as a result of lack of iodine. If iodine was provided in adequate amounts during the time these substances were given to the animals, goiters were not produced.

During the past two years it has been shown experimentally that there are two rather clearly defined groups of chemicals which appear to depress thyroid function and, as a result, induce extreme hyperplasia of the thyroid together with lowered basal metabolic rates. One of these groups includes thio-urea and its derivatives, which are sulfocarbamides in which the oxygen of urea is replaced by sulfur; the other group of chemicals which depress thyroid function contains members of the aniline series. These drugs, when given to animals either by mouth, as in purified diets or in their drinking water, or parenterally by injection, induce very rapid changes of thyroid function, which result in increased heights of the acinar cells of the thyroid and in extreme cellular hyperplasia (Figs. 1, 2, 3 and 4).

In contrast to the fact that iodine when coadministered with the goitrogen will prevent the development of cyanide goiters, repeated experiment has shown that iodine, even in exceedingly large amounts, will not prevent the thyroid changes which these newer goitrogens induce (Fig. 5). On the other hand, the thyroid hormone, thyroxine or desiccated thyroid gland not only will prevent the development of a goiter but will restore normal histologic patterns in the thyroids after the goiters have been produced and while the drug is still being administered (Fig. 6). This relationship of the thyroid hormone to the failure of these newer goitrogens to induce thyroid hyperplasia was the basis of the opinion suggested by Astwood[2] and others that these thyroid depressants act in some way upon the mechanism in the enzyme system which functions in the conversion of diiodotyrosine to thyroxine.

Recently my colleagues and I have learned in our laboratory that the sulfone, promizole (4,2'-diaminodiphenyl-5'-thiazolesulfone), likewise has goitrogenic potencies.[5] The administration of 5 mg. per day, either by mouth or parenterally, to a growing immature rat produced within a week or ten days a degree of thyroid enlargement not unlike that which appears when thio-uracil, at a level of 0.1 per cent is provided rats in their drinking water.

When either of the goitrogens (thio-uracil or promizole) was given to young rats in the amounts stated, changes in their thyroid glands were detected within twenty-four hours. The colloid of the acini, which normally stains a reddish pink with acid dyes, was poorly stained and presented a stippled, punctate appearance, rather than the clear homogeneous pattern normally seen. The colloid retracted from the acinar cell membrane and gradually contracted into small, amorphous fibrous nodules. In ten days to two weeks, all traces of colloid had completely disappeared from the gland.

While these changes occurred in the colloid and within forty-eight to seventy-two hours of the onset of the administration of the goitrogen, an increase of the height of the acinar cell was observed. This was the first sign of hypertrophy. Thyroid cells increased rapidly in height and in number, and papillary projections protruded into the lumina of the acini. The size of the lu-

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Fig. 1. Anterior view *(left)* and posterior view *(right)* of a portion of the trachea and larynx of a normal rat, showing the thyroid attached.



Fig. 2. Anterior view *(left)* and posterior view *(right)* of a portion of the trachea and larynx of a rat which has received thio-uracil in its drinking water for a period of five months.

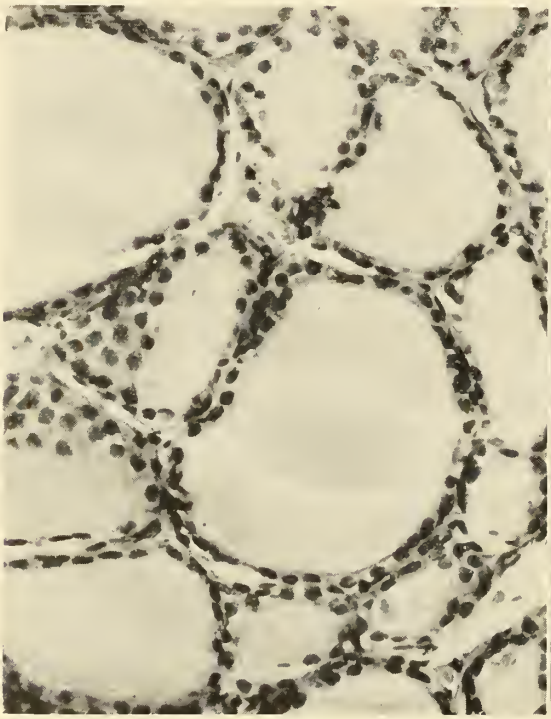


Fig. 3. Section of the normal thyroid gland, showing the character of the colloid and the epithelium in the unstimulated gland.

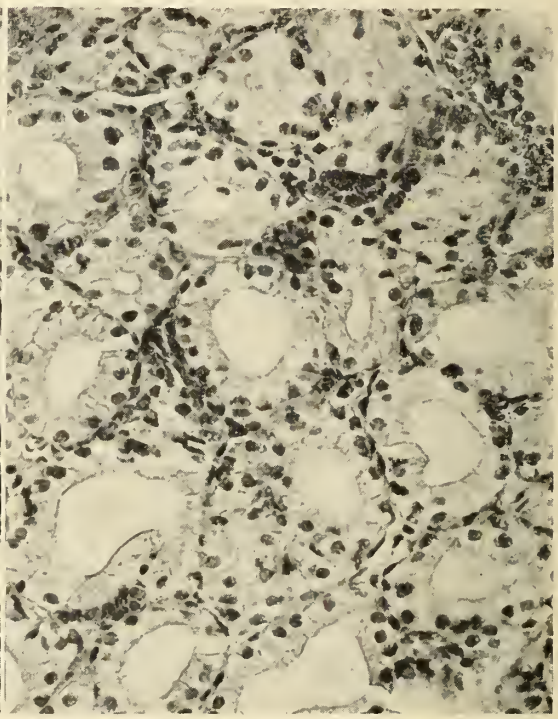


Fig. 4. Section of the thyroid gland of the animal which had received thio-uracil, shown in Figure 2.

mina correspondingly decreased and gradually the extent of hyperplasia and the encroachment of the thyroid epithelium practically abolished all spaces previously occupied by the colloid substance. New acini arose within the hyperplastic wall of the older acini, as a result of a separation and a rearrangement of preëxisting cells into new units. These new acini subsequently increased in size and as a result of all of these rapid changes within the gland a goiter of greatly increased weight, composed of a greatly increased number of acini, was formed.

The manner in which these goitrogens depressed thyroid function has been extensively studied in recent months but the mechanism is incompletely understood. Rawson, Tannheimer and Peacock[11] have recently classified goitrogens into iodine-resistant and iodine-inhibited goitro-

gens. Potassium thiocyanate, for example, is an iodine-inhibited goitrogen, for its administration to an animal did not produce a goiter when iodine was coadministered with the drug. Thio-urea, thio-uracil, promizole and sulfaguanidine, on the other hand, are iodine-resistant goitrogens, for even large amounts of iodine when coadministered with these drugs will not inhibit the formation of the goiter.

These investigators have shown that goiters produced by these two types of goitrogens react differently to injected iodine when radioactive iodine, I^{131} is administered. Four hours after radioactive iodine had been given intraperitoneally to white rats, an average of 56 per cent of the injected iodine had been taken up by the thyroids of normal animals serving as controls. Thyroids previously made goitrous by administration of potassium thiocyanate collected an average of 86.5 per cent of the iodine administered, while the thyroids of rats made goitrous by administration of thio-uracil collected in the same period only 10.1 per cent of the iodine injected. The goitrogen, thio-uracil, thus in some way appears to prevent the collection of iodine by the thyroid cells.

Iodine concentrations in the thyroid gland are considered to reflect the amounts of active thyroid principle which is present in the thyroid at any one time. Astwood and Bissell[3] have recently reported their study of the iodine content of the thyroid glands of young rats which were given thio-uracil in their drinking water at the level of 0.1 per cent. They detected a significant decrease of the amount of iodine in the thyroid within twenty-four hours after the drug had been given to the animal. Within five days, the thyroid iodine level had dropped to as low as one-thirtieth of the normal iodine content of the thyroid. When the drug was withdrawn and pure water for drinking restored to the animals, the iodine content of the thyroids increased rapidly to normal levels. Thus these studies of Rawson and of Astwood and their collaborators clearly show that the thyroids of animals given thio-uracil not only fail to take up iodine from the blood stream but rapidly decrease their own iodine stores of the colloid and as a result prob-



Fig. 5. Section of the thyroid gland of an animal which had received thio-uracil for five months and then was given 500 micrograms of iodine, as sodium iodide daily for fourteen days. The histologic pattern remained unaffected by iodine.

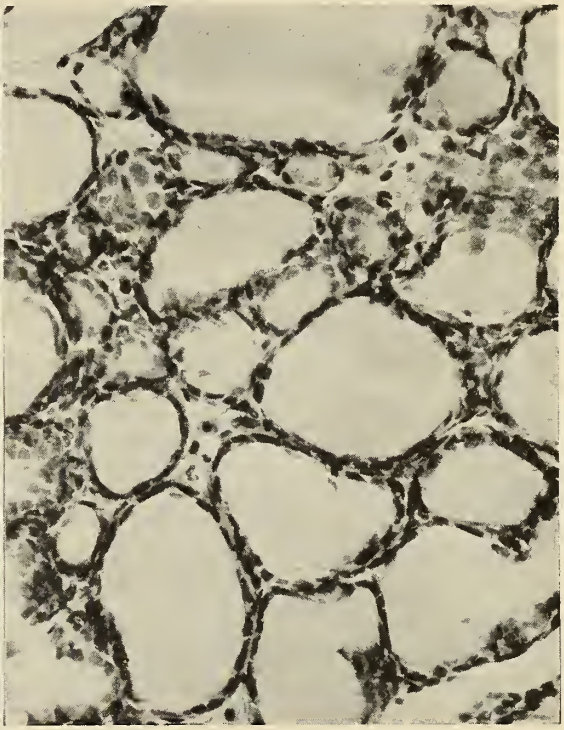


Fig. 6. Section of the thyroid gland of an animal which had received thio-uracil for five months and then was given 50 micrograms of thyroxine daily for fourteen days. The histologic pattern was essentially normal.

ably fail to elaborate the thyroid hormone, thyroxine.

Also using labeled iodine (inorganic iodine, I^{131}) as a test object, Franklin, Lerner and Chaikoff[4] have studied the influence of the goitrogen thio-uracil on the formation of thyroxine and diiodotyrosine by the intact thyroid gland. Rats were given the drug at a level of 0.035 per cent in their diet for seven days. Each animal thus received from 3.4 to 4.2 mg. of thio-uracil per day. When administration of the drug was stopped after seven days of treatment, radioactive inorganic iodide was injected into the animal. Forty-eight hours later the thyroid glands of these animals were analyzed for their total radioactive iodine, for radiothyroxine and for radio-diiodotyrosine. The results of Franklin, Lerner and Chaikoff confirm the conclusions of other studies of the depressed functions of such thyroids and show that the capacity of the goitrous gland to pick up and incorporate injected radioactive iodine into diiodotyrosine and into thyroxine is greatly retarded.

Basal metabolic rates of experimental animals invariably fell whenever these thyroid depressing goitrogens were administered. This was true whether the goitrogen was a nitrile, as potassium thiocyanate, or whether thio-uracil or sulfaguanidine was given. MacKenzie and MacKenzie[8] have recently reported that a fall in the basal metabolic rate of 10 per cent occurred in five to seven days of treatment with sulfaguanidine. This fall increased to 20 per cent in ten to fourteen days and appeared to coincide with the depletion of colloid from the thyroid acini. These decreases in rates of oxygen consumption were likewise not inhibited by giving iodine but they were entirely prevented by the daily administration of 1 microgram of thyroxine per 10 gm. of body weight. The mechanism of inhibition was entirely reversible, for the withdrawal of the sulfaguanidine from the diet resulted in a prompt rise of the metabolic rates of these animals.

Although the mechanism of the action of these iodine-resistant goitrogens is not clearly understood, their administration appears to prevent the iodination of tyrosine and the subsequent formation of thyroxine. The resulting hyperplasia of the thyroid is evidently mediated through the pituitary gland, for both MacKenzie and MacKenzie and Astwood and his associates have shown that, when goitrogens were given to animals whose pituitary glands had been removed, hyperplasia of the thyroid did not occur. Furthermore, it has been stated that the cells of the pituitary in animals which were made goitrous by these thyroid depressants resembled those of animals which had been previously thyroidectomized.

Rapid changes of the pituitary gland of experimental animals follow thyroidectomy. These include a marked loss of the acidophils, accompanied by an increase of the number of vacuolated basophilic cells derived from the chromophobes. These changes are thought to be regressive and resemble similar changes which ensue upon castration. These vacuolated basophils are the "thyroidectomy cells" described in the literature. The increase of the size of the pituitary gland in animals which have received the goitrogen for prolonged periods, as well as the presence of the large vacuolated basophilic cells, is a reaction identical with pituitary changes which follow thyroidectomy.

A very fine balance is thought to exist between the functions of the pituitary and those of the thyroid gland. Salter[13] has designated this relationship "the pituitary-thyroid axis" the balance of which may be maintained by the levels of thyroxine and of thyrotropic hormone circulating in the blood stream. It would seem that this balance between the thyroid and pituitary functions must be seriously modified by these goitrogens. Although there are as yet no experimental data to sustain the conviction that the level of thyroxine in the blood of an animal is lowered after one of these goitrogens has been given, yet, it is quite probably true. The loss of thyroid iodine and the failure of the thyroid to take up iodine and to convert it into thyroxine are established facts which suggest that the blood level of the thyroid hormone is reduced.

If the concept of Salter is correct, then it is reasonable to conclude that the changes observed in the pituitaries of animals that have hyperplastic thyroids may be due to some stimulus exerted upon the pituitary by the lowered thyroxine level in the blood stream. This may result, then, in an increase of the elaboration of the thyrotropic hormone by the pituitary, which in turn stimulates the thyroid epithelium, resulting in the hyperplastic changes observed in the gland. There are no published data on the bio-assay of

thyrotropic hormone in the pituitaries of goitrous rats but preliminary studies in this laboratory on the effect upon the acinar cell heights of thyroids of day-old chicks have led my colleagues and me to conclude that the amounts of thyroid-stimulating hormone elaborated by the pituitaries of goitrous rats may be greater than normal.

Summary

Thio-urea and its derivative thio-uracil, many sulfonamide compounds, notably sulfaguanidine, and at least one sulfone, promizole, are goitrogens which, when administered to experimental animals, induce marked hyperplasia of the thyroid gland and lower basal metabolic rates. The effect of these drugs is reversible. Normal histologic patterns were restored and basal metabolic rates were elevated rapidly upon cessation of administration of any of these drugs.

Although the mechanism of action is not understood, these thyroid depressants apparently secure their effect by inhibiting the formation of thyroxine by the thyroid gland. Not only are thyroids subjected to the influence of these drugs unable to take up from the blood stream the required amounts of iodine, but they rapidly lose their normal iodine content. Thus at least one inhibitory influence of these goitrogens is to restrict the iodination of the thyroglobulin molecule, thereby restricting the amounts of thyroxine produced.

The coadministration of either thyroxine or desiccated thyroid with the goitrogen nullified its thyroid-depressing effect but even large amounts of iodine proved ineffective in preventing the thyroid changes. Thus, all data at hand favor the hypothesis that these goitrogens do not destroy thyroxine nor do they in any way lessen the needs of the organism for the thyroid hormone. Rather, they seem to inhibit the formation of thyroxine by preventing its synthesis in the thyroid cell.

Changes in the cells of the pituitary gland accompanied the prolonged administration of the goitrogen. These changes included an increase of the size of the anterior lobe and the appearance of numbers of basophils, presenting vacuolar changes. These cells are said to resemble the pituitary basophils which appear in animals made hypothyroid by thyroidectomy. Thus, the hypothyroid state induced by the goitrogen is somewhat like that which follows the removal of the thyroid. The increased size of the thyroid gland may be considered to be the result of the stimulus incited by increments of thyroid-stimulating hormone put out by the anterior lobe of the pituitary responding to low levels of the thyroid hormone in the circulating blood.

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THIO-URACIL THERAPY IN HYPERTHYROIDISM

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IN MAY of 1934, E. B. Astwood of Boston[1] published a report on the reduction of basal metabolic rate and the abolition of signs and symptoms of hyperthyroidism in three patients using thio-urea and thio-uracil by mouth. Since that time over 200 individuals with hyperthyroidism treated with thio-uracil have been reported in the literature. The purpose of this paper is to review the clinical experience to date, using illustrative case material from our own series and following this with a discussion of the merits and otherwise of this new form of therapy.

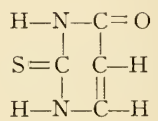
Fundamental considerations are in large part not discussed, being dealt with comprehensively by Dr. Higgins in another paper in this issue. However, to give due recognition to the original workers a certain amount of repetition will perhaps be excused.

In 1941, MacKenzie, MacKenzie and McCollum[16] reported a remarkable enlargement of the thyroid in animals which had been fed sulfaguanidine. In that year and in 1942 there appeared several papers[13,27,28] which can now be seen as contributory; but it was two simultaneously published studies by MacKenzie and MacKenzie[15] and Astwood, Sullivan, Bissell and Tyslowitz[5] which made clear the unique nature of the new goitrogenic agents of which sulfaguanidine is the prototype and thio-uracil the most recent example.

The goiters produced by these agents, unlike those produced by the older goitrogens[14,17,18,24,31,34,35,36], viz. soy beans, thiocyanate, cabbage, and seeds of the Brassica family generally, cannot be prevented or abolished by iodine administration. To make a long story short the currently accepted view[5,15,23,37] of the action of thio-uracil, as characteristic of the new thyroid drugs, is that it inhibits the uptake of iodine and the formation of thyroid hormone by the thyroid gland[4,7,8,9,23,25], colloid typically being reduced or depleted[5,11,15] and basal metabolic rate falling.[5,15] In the absence of normal thyroid function the pituitary is believed to overact, producing hyperemia and epithelial hyperplasia of the thyroid; this explanation of the thyroid hyperplasia is based upon: (1) the known action of the thyrotropic hormone of the pituitary, (2) observable histologic changes in the pituitary following sulfaguanidine administration, (3) the ability of administered thyroxin to prevent or abolish thio-uracil-induced hyperplasia of the thyroid, (4) the absence of thyroid hyperplasia in hypophysectomized animals given the new goitrogens.[5,11,15] The acceptance of this view is strengthened by a consideration of alternate explanations. General toxic effect is ruled out because some of the toxic agents are least effective and the effective agents do not significantly interfere with growth and development if thyroid is fed. Since parenteral is as effective as oral administration, inhibited formation of some essential metabolite in the gastro-intestinal tract does not appear likely. Elevation of tissue requirements for thyroxin or destruction of it is contradicted by the fact that administered thyroxin is normally effective despite the drug.[15]

Nature, Distribution, and Dosage of Thio-uracil

Thio-uracil (more properly, 2-thio-uracil) has the formula:



It[37] is a white crystalline powder, readily soluble in NaOH, soluble 1:2000 in water, insoluble in acids, alcohol, or ether, has no odor but a bitter taste. Uracil, a pyrimidine, is a constituent of plant nucleic acid. Thio-uracil emerged as the compound of choice, i.e. high effectiveness with low toxicity, after Astwood[2] had tested 106 compounds. In animals, sulfapyridine, sulfadiazine, sulfamethyldiazine, share with sulfaguanidine in being markedly goitrogenic; sulfathiazole and sulfanilamide are less effective. Thio-urea and other substituted ureas were also found to be active. In passing it is interesting to note that whereas there have been reports[24] of goiter induced in hypertensives by thiocyanate, so far no one has recorded such an effect for clinically administered sulfonamide. Thio-uracil is rapidly absorbed, the

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maximum blood level from a single small dose being reached in fifteen minutes. One-third of the usual dosage is excreted in the urine[37]; none has been found in the feces. Thio-uracil in the blood is chiefly in the cells, particularly the white cells. Other tissues which acquire the greatest concentration are the pituitary, thyroid, adrenal and bone marrow, the last organ being particularly worthy of note in respect to the toxic manifestations so far encountered.

Although higher dosages were originally used, the currently recommended scheme of administration[38] is 0.6 gms. daily (0.2 gms. t.i.d.) initially with reduction to 0.4 (0.2 b.i.d.) daily after two weeks or when definite clinical improvement occurs; after a further two weeks or on return of the basal metabolic rate or clinical condition to normal, the dose is reduced to 0.2 gms. (0.1 gm. b.i.d.) daily. Thio-uracil is available* as 0.1 gm. tablets which are taken orally. Maintenance dosage is generally 0.1 to 0.2 gms. daily. Some qualification about dosage in exceptional cases will receive later comment. Determination of blood levels of thio-uracil is no longer considered necessary.[38]

Results

The most extensive clinical experience with thio-uracil so far recorded has been that of Williams and Bissell[37] and Williams and Clute.[38] Present purposes will be well served by first sketching some of their principal findings. In all, these authors have recorded treatment with thiouracil of seventy-two patients with thyrotoxicosis including classic Graves' disease and toxic nodular goiter. No differentiation in results is recorded for the different types. It is important to note that almost all of their patients were ambulatory and performing their usual duties.

Fifty-nine of their seventy-two patients had either not received iodine at any time or for at least one month before treatment with thio-uracil. For the sixteen patients in this group with the highest initial basal metabolic rate (+55 to +89), the basal metabolic rate after four weeks of treatment averaged + 12 (range —8 to + 32); in six weeks the average basal metabolic rate of these was 0 (—15 to +15) and there had been an average weight gain of seven pounds. In general the metabolic rate of these sixteen patients was within the normal range in five weeks. For further noniodine-treated patients who were less toxic than the above, the decrease of basal metabolic rate to normal occurred more rapidly, the average time being three weeks in those whose initial metabolic rates were under +35. None of these individuals resisted thio-uracil therapy and the extreme time for return to normal metabolic rate was seven weeks. For the sake of brevity the general condition of patients is indicated by the basal metabolic rate because in the great majority of cases change in clinical status was in as good accord with the basal metabolic rate as is usually observed. Weight gain as an index of improvement was most marked during the fourth to eighth week of treatment. The similarity of the remissions to those following thyroidectomy had been carefully recorded[32,38], in respect of symptoms, weight, pulse, blood pressure, metabolism of calcium, phosphorus, nitrogen, creatine, and blood cholesterol. On the other hand there are certain unusual features associated with thio-uracil remission, at least in certain cases, and these will be discussed below in commenting upon our own cases.

A further thirteen of their seventy-two cases had received iodine within one month prior to thio-uracil therapy. The metabolic response was notably slower, normal values not being achieved until the sixth to eighth week. Gain in weight although eventually good was not as prompt as in the cases without iodine. Previous treatment with iodine therefore is seen to produce resistance or delayed response.

On the basis of their experience with all of the seventy-two patients, Williams and Clute remarked, "that this drug can be depended on in essentially all cases to lower the basal metabolic rate to a normal range and to maintain it at that level so long as treatment is continued. Associated with this response in the basal metabolic rate is a clinical remission of the disease with disappearance of tachycardia, hyperidrosis, nervousness, diarrhea, weight loss and other toxic manifestations." This then represents the favorable aspect of thio-uracil therapy. Untoward reactions, however, were not absent in their cases and will be reported along with the experience of others in discussing illustrative cases from our own experience.

*We are indebted to Dr. Benjamin W. Carey, Lederle Laboratories, Pearl River, New York, for the supply of thiouracil (Deracil) used in this study.

University of Minnesota Hospital Cases

We have had experience with twenty-six cases. Although there have been many distinctly favorable results, the group contains more unfavorable reactions than any series so far recorded. This may or may not be due to the prior selection that takes place in cases referred to this clinic; in any case those we have seen have had a high incidence of iodine-fastness and other complications. The cases have been under the direct management of the staff members responsible for the different services of Medicine and Pediatrics. The nature of the study has therefore to a certain advantage been that of a practical trial rather than a uniformly conducted experimental series. Bed rest, high caloric diet, supplementary vitamins and sedation have been used as they would have been if thio-uracil had not been employed. In general, rather than waiting for complete remission the cases have been subjected to thyroidectomy when the clinical condition warranted it.

Reduction of Signs and Symptoms of Hyperthyroidism.—For the purpose of evaluating disadvantages all cases are considered. However, in assessing the ability of thio-uracil to reduce metabolic rate and alleviate hyperthyroid signs and symptoms, seven cases in which thio-uracil was used too briefly for proper evaluations are excluded; in three of these, toxic reactions necessitated stopping the drug; the other four without any untoward reaction to thio-uracil were changed over to idodine and/or subjected to thyroidectomy at the discretion of the clinician in charge of the case. Of the remaining nineteen individuals, eight had not received preceding treatment with iodine. On the average these eight patients had an initial basal metabolic rate of +43 which in twenty-four days of treatment was reduced to +14, with a weight gain of five pounds and a reduction of 24 in the pulse rate. The eleven patients who had received iodine within one month of the time of starting thio-uracil had on the average an initial basal metabolic rate of +57 which was reduced in thirty-five days to +23 with corresponding gain in weight and reduction of pulse rate. These results agree with those obtained by Williams and Clute[38] and others[6,21,23,32,33], the iodine-treated patients again giving a slow response.

Illustrative cases are found in the following reports:

Case 19.—Good response; no iodine.

This forty-nine-year-old woman presented with symptoms of weakness, easy fatiguability, nervousness, irritability, palpitation, tachycardia, heat intolerance, dyspnea on exertion, increased appetite, and weight loss. She had had three attacks of similar symptoms in the past thirty years, relieved by prolonged administration of Lugol's solution. There had been no iodine medication for at least six months prior to her admission. Sedatives had been given without relief. On physical examination the blood pressure was 146/76, pulse 100-120. She was mildly hyperactive. Her skin was moist and warm. There was slight thyroid enlargement more noticeable on the left but no bruit. Marked quadriceps weakness, fine tremor, thinning and softening of the finger nails were noticed. There were no eye signs. The heart was normal in size and negative except for increased action and a systolic murmur. In view of the necessity of watching the white cell count in thio-uracil therapy it is interesting to note that her white count on admission was 3,800 with 39 per cent neutrophils. Blood cholesterol was 137 mg. per cent. Four satisfactory basal metabolic rate determinations established her initial rate at +61 per cent. She was started on 0.6 gm. of thio-uracil daily. At the end of thirty-one days the basal metabolic rate was +14 and the pulse rate was 70-74. There was a striking improvement in symptoms consistent with the change in pulse and metabolic rate; the patient had gained six pounds by the time of thyroidectomy which was undertaken on the thirty-ninth day of thio-uracil therapy, it being delayed until that time on account of the operative schedule. The operation and postoperative period were without incident. The 45 gms. of thyroid tissue removed showed a marked variation in colloid content and in the height of the epithelium.

The above case does not represent the best result in the group of ten noniodine-treated patients. Two other patients of equal severity had as good responses in twelve and twenty-seven days, respectively. Still four others with initially moderate hyperthyroidism were successfully prepared, two for thyroidectomy and two for chronic maintenance, in seventeen, twenty-two, eighteen, and twenty days. The three remaining cases were definitely less successful than the example given; in two of these, toxic reactions occurred and the drug was stopped. The third with an initial basal metabolic rate of +51, received thio-uracil for twenty-six days, at the end of which time the basal metabolic rate was +35 and the weight gain six pounds. There was, however, no drop in pulse rate and the subjective response was poor. The thio-uracil was stopped and Lugol's solution substituted. After eight days the basal metabolic rate was +8 per cent with some subjective improvement. A successful thyroidectomy was

performed. This then gives a brief picture of the patients not receiving iodine. The toxic manifestations remain to be discussed but one further point should be made. The case example given represents what approximately may be expected, i.e., remission to normal basal metabolic rate in approximately four to five weeks. The length of this waiting period deserves special note.

Among the sixteen patients who had received iodine within the previous month, three with initial basal metabolic rates of +50, +85, +46 had a reduction to under +12 after, respectively, twenty-five, thirty-three, and thirty days of thio-uracil therapy. Two had slower responses, their initial basal metabolic rates of +55 requiring six weeks for reduction to +20. In six cases the results cannot with certainty be rated as better than fair because, although all improved and none exhibited toxic symptoms, thyroidectomy was undertaken before the full effect of thio-uracil could reasonably have been expected. In four cases, two of which have been included above, the benefits of preparation by bed rest, high feeding, and iodine administration had already been tried and found wanting. One of these four patients did not respond. One fifty-year-old female with preceding pulmonary tuberculosis treated by thoracoplasty and having critically reduced vital capacity, died during thio-uracil treatment; the post mortem diagnosis was cor pulmonale and bronchopneumonia. It was difficult to assess thio-uracil in this case. She had, however, no recognized thio-uracil toxicity and had gained seven pounds during forty-six days of its administration. Three patients exhibited toxic symptoms and the drug was discontinued, one of these having had a quite satisfactory response in the twenty-four days before toxicity was manifest. This well-assorted group of cases is not suitable for statistical analysis but does provide useful examples for consideration of this drug. Cases which illustrate special points are separately recounted.

Case 6.—Good response; previously on Lugol's solution.

This eighteen-year-old woman developed nervousness, muscular weakness, increased appetite, heat intolerance and palpitation four months prior to hospital admission. She had received Lugol's solution for three weeks before admission. There was a diffusely enlarged thyroid gland, tachycardia, high pulse pressure, prominent pulmonary conus, a systolic murmur at the cardiac apex, marked purposeless motion, smooth, moist skin, fine tremor of the hands and tongue, and exophthalmos. Certain details of the course of this patient are given in Figure 1. The basal metabolic rate fell in thirty-three days to +8 per cent with a weight gain of 20 pounds. No definite toxic manifestations occurred

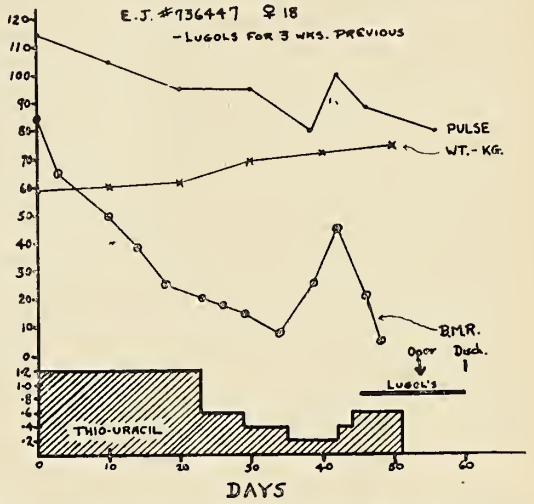


Fig. 1. Case 6. Good response in a previously Lugolized case. Note the escape with lowering of the dose. Thio-uracil charted as grams per day.

although the patient complained of tightness in the wrists and ankles. It will be noted that when thio-uracil was reduced to 0.2 gm. daily, there was a prompt elevation of pulse and metabolic rate. She tolerated a bilateral subtotal thyroidectomy well with no rise in pulse rate during a two-hour operation. Sixty grams of thyroid tissue were removed. The gland was friable and bled a great deal. Histologically there was marked hyperplasia such as is present in an untreated Graves' disease. Postoperatively her temperature rose to a high of 102.6° F. on the second, but was normal on the fourth day. Subsequent course has been very satisfactory.

The two following cases, illustrating special points for consideration, also showed a striking response.

Case 11.—Thio-uracil after failure of other therapy.

This sixty-eight-year-old woman had had a goiter all her adult life. During the five years prior to hospitalization, she had some heat intolerance, nervousness, sweating, dysphagia, dyspnea, hoarseness and a weight loss of 50 pounds. She had had recurrent attacks of right upper quadrant abdominal pain and fever associated with definite jaundice for two years. On examination she had a very large, stony-hard, irregular thyroid which extended substernally. There was stare and lid-lag. Her skin was warm, moist and moderately pigmented. The heart was normal in size; tachycardia and auricular fibrillation developed during her hospital stay. Preparation for thyroidectomy using iodine but no thio-uracil progressed well for several weeks but was interrupted by an attack of gall-stone

colic with fever, leukocytosis, severe anorexia and abdominal tenderness. She recovered incompletely from this and her hyperthyroidism was definitely aggravated in spite of continued use of Lugol's solution. Her basal metabolic rate which was + 38 per cent at time of admission, rose to + 46 per cent after the subsidence of fever. Physical exhaustion was marked and feeding was very difficult. Because of the progression of symptoms thio-uracil was started and she was given 1.0 gm. daily for thirty days after which time she was much improved clinically, and her basal metabolic rate was + 12 per cent. A left thyroid lobectomy was performed with removal of 270 gms. of adenomatous thyroid tissue. Her blood pressure rose to 220 systolic during the operation, but otherwise she tolerated the operation well. Her temperature rose to 102° F. postoperatively, but it was normal on the third day. She has not been back to clinic since discharge, but has written that she is feeling well and is able to do her own work. The histology of the thyroid tissue removed was that of an adenoma; there was considerable calcification.

This case is illustrative of four in our series in which thio-uracil has rescued an apparently hopeless situation. Its use in such cases is clearly indicated.

Case 2.—Long-maintained therapy.

This sixty-four-year-old woman noted dyspnea on exertion, nervousness, occasional palpitation, heat intolerance, profuse sweating and a ten-pound weight loss in spite of a good appetite for a year prior to hospitalization. She had definite symptoms of chronic sinusitis and had noted a flare-up of symptoms just prior to hospital admission. She had a tachycardia, increased pulse pressure, auricular fibrillation, left ventricular cardiac enlargement. Her eyes were prominent and lid-lag, stare and poor convergence were present. She had an assymetric nodular goiter. There was slight pitting edema of the ankles and legs, and the liver was enlarged. The mild evidence of heart failure responded to bed rest and digitalization. Having already been started on Lugol's solution she was given thio-uracil concurrently. She received 20 gms. of thio-uracil in twenty-five days in the hospital with very satisfactory response. Her basal metabolic rate decreased from + 50 per cent to + 12 per cent with corresponding clinical improvement. She refused operation and was discharged from the hospital with instructions to take 0.2 gm. of thio-uracil a day. On the first subsequent visit to clinic she exhibited definite evidence of recurrence of all her symptoms of hyperthyroidism so the dose of thio-uracil was increased to 0.4 gm. per day along with Lugol's solution. She improved very definitely again in two weeks and for eight months was then maintained on a dose of 0.2 gm. of thio-uracil without any Lugol's solution. Withdrawal of thio-uracil at that time resulted in a return of symptoms. The 0.2 gm. daily dose was again given and she has been maintained satisfactorily on it for a further two months. Auricular fibrillation disappeared spontaneously after two months of therapy. She complained of tightness and numbness of her feet on one visit but this complaint disappeared, and she has demonstrated no other toxic manifestations.

This is one of the two cases in which thio-uracil has been used successfully as maintenance therapy. The second case was in a twelve-year-old girl who had recurrent hyperthyroidism after thyroidectomy at the age of eight; the initial dose in this second case was 0.5 gm. with 0.1 gm. daily for maintenance. Williams and Clute have treated thirty-five patients with maintenance doses of thio-uracil for more than four months and sixteen patients for more than six months. Astwood[3] withdrawing the drug in eleven patients after six to nine months of treatment, found that continued remissions occurred, five of the patients being observed for longer than three months after the withdrawal. This suggests a new possibility for thio-uracil. However, our experience with withdrawal in this one case has not been successful and William and Clute had recurrences in all four cases where the drug was discontinued after "several months" of therapy. More evidence is obviously needed. As regards maintenance doses 0.1 gm. daily has sometimes[38] proved to be inadequate. On the other hand, with the 0.2 gm. dose[21,38], evidences of myxedema have developed.

Case 9.—Slow response; previously on Lugol's solution.

This fifty-one-year-old woman lost 20 pounds in five weeks following an attack of "flu." She had palpitation, heat intolerance, and muscular weakness for five years, but had been able to compensate apparently by an increased appetite. Before coming here she received Lugol's solution for one month irregularly because of nausea and vomiting induced by it. She had an assymetrically enlarged thyroid gland, marked brownish pigmentation of her skin, wavy and friable fingernails, and a tachycardia. The covers of her bed demonstrated the remarkable tremor of her hands and feet. Initial basal metabolic rate was + 57 per cent. She received thio-uracil for forty-two days with a fall of basal metabolic rate to + 17 per cent. A subtotal thyroidectomy was performed and the surgeon encountered considerable bleeding, which he thought was more than usual for thyroidectomy. Her postoperative course was uneventful. Sections of the thyroid revealed very small acini with many cellular areas without acini or colloid. It is possible that thio-uracil caused some nausea but no severe nausea or vomiting as was encountered with iodine.

This case represents about the average of successful responses in patients previously receiving Lugol's solution. Cases of this sort, still open to prolonged trial of bed rest, feeding, sedation, and iodine have not been classed with the four, of which Case 11 was an example, where thio-uracil may be fairly said to have come to the rescue. Nevertheless, it produced a satisfactory result and the advantage of a relatively normal metabolism at the time of thyroidectomy is not to be gainsaid. This advantage has been particularly welcome in other patients who had had cardiac decompensation during the course of their disease.

Case 3.—Failure to respond; previously on Lugol's solution.

This fifty-year-old woman had had pernicious anemia for four years. About nine months before hospital admission she had increasing nervousness, heat intolerance, tremor of hands, a good appetite, palpitation, dyspnea on exertion, and a weight loss of 30 pounds. Iodine was given for three months with initial improvement but with return to her former state prior to being seen here. She had a moderately enlarged firm diffuse goiter, a stare and lid-lag, tachycardia, a blood pressure of 158/98, a systolic murmur at base and apex of heart, muscle weakness, and warm moist skin. The initial basal metabolic rate was + 61 per cent. She received 1.0 gm. of thio-uracil for thirty-one days and 0.6 gm. for sixteen days, a total of seven weeks. There was a gradual weight gain from 85 pounds to 93 pounds but there was only moderate improvement in the basal metabolic rate to + 45 per cent. There was some clinical improvement. She tolerated a two-hour operation well and her postoperative course was uneventful. Thirty-eight gms. of thyroid tissue were removed and had the histologic appearance of regressing Graves' disease.

Because of concurrent bed rest and high caloric diet, it cannot be concluded that thio-uracil had any effect here. All of the cases recorded by Williams and Clute gave a satisfactory response in under seven weeks. Bartels[6], in treating severe hyperthyroidism preoperatively with thio-uracil, was satisfied to wait as long as six months and obtained satisfactory remissions in all cases. Paschkis, Canatrow et al.[21], finding 1.0 gm. as daily dose ineffective after several weeks, employed in three cases 2.0 gm. of the drug with subsequent full effect in a short period of time. The problem can be argued either way. It would seem that barring toxic reactions, enough drug for a sufficient period of time will eventually lower the basal metabolic rate. On the other hand, circumstances in the individual case may decide that the delay is inadvisable.

Toxic Reactions.—In our twenty-six cases, there were five toxic reactions for which it seemed necessary or wise to stop the drug.

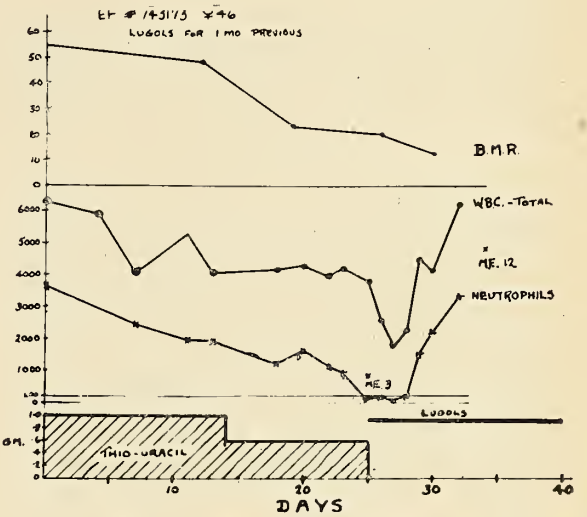


Fig. 2. Case 10. Leukopenic response to thio-uracil. ME indicates percentage of myelo-erythroid layer in sternal marrow.

Case 18.—Severe rash.

A seventy-two-year-old woman on the fourth day of 0.6 gm. daily dose of thio-uracil, developed a severe erythematous rash mostly on the face and upper trunk with edema around the eyes. The rash disappeared after stopping thio-uracil without discontinuing other therapy. She had previously manifested sensitivity to sulfonamide.

Case 10.—Leukopenia.

This forty-six-year-old woman developed symptoms of hyperthyroidism two years previously with progressive increase in symptoms during the six months prior to hospitalization. She had a diffusely enlarged thyroid gland, was very overactive, and had lid-lag, stare and poor power of convergence. She had received Lugol's solution for one month before coming here. She was given 1.0 gm. of thio-uracil daily for fourteen days and 0.6 gm. daily for ten days. Certain details are shown in Figure 2. She had a mild neutropenia during most of her treatment but severe neutropenia developed on the twenty-fourth day of treatment. Bone marrow biopsy at this time revealed arrest of the myeloid development at the myelocyte stage, with a myelo-erythroid layer of 3 per cent. Bone marrow biopsy performed ten days after the first one revealed a hyperplasia of all bone marrow elements with a rise of the myelo-erythroid layer to 12 per cent. Note the rise in neutrophils and total leukocytes after stopping thio-uracil. Her basal metabolic rate decreased from + 54 per cent to + 20 per cent with a correspond-

ing clinical improvement. Lugol's solution was administered for one more week and she had a subtotal thyroidectomy thirty-four days after starting therapy. She tolerated a two-and-one-half-hour operation well and her postoperative course was uneventful. Histologically the appearance of the thyroid was that of regressing Grave's disease with some areas of persistent marked hyperplasia.

She received undoubted benefit from the thio-uracil, but she also suffered a serious toxic manifestation which fortunately subsided promptly.

Case 13.—Purpura.

This twenty-one-year-old woman with moderately severe hyperthyroidism received 1.0 gm. of thio-uracil for fourteen days. It had to be discontinued because of the appearance of cutaneous purpura; thrombocytopenia (77,000 platelets), increased bleeding time, and positive cuff test were found. The purpura disappeared in a few days and the platelet count rose to normal. She had a follicular tonsilitis to complicate her course further, but now seems to be improving under more conservative therapy.

She received no benefit from thio-uracil and suffered a serious toxic manifestation which, however, cleared on removal of the drug. Purpura following thio-uracil has not previously been reported. Because of the possibility of thrombocytopenia, it certainly will be advisable to check for bleeding tendency before submitting any patient to operation.

Cases 14 and 25.—Increased bleeding tendency.

Both of these cases developed a markedly positive cuff test, one on the twenty-fourth and the other on the twenty-ninth day of thio-uracil therapy, 0.6 gm. being the daily dose. In view of the experience with Case 13, the drug was stopped in both.

In the first of these two cases, the white count at the time the drug was stopped was 4,500, with 41 per cent neutrophils and the platelet count was 350,000; after stopping the drug, the cuff test returned to normal. Iodine was started when the thio-uracil was stopped and a week later the basal metabolic rate was + 12. No difficult bleeding was encountered at operation which was done sixteen days after discontinuing thio-uracil.

The second case had a negative cuff test before thio-uracil was started; it became progressively positive until the drug was discontinued; at this time the platelet count was 130,000 and the white cell count 3,000 with 52 per cent neutrophils.

It will be noted that two of these five reactions were in patients receiving the higher dose levels earlier employed; the remaining three toxic reactions received the lower dose now generally recommended. Other toxic reactions in our cases have been minor or questionable.

Williams and Clute[38] in their seventy-two cases, discontinued the drug in three cases and stopped it temporarily in others. Thirteen of their patients had some sort of untoward reaction ranging from mild to severe, the most important of which were, one agranulocytosis; three urticarias, one of these with painful swollen joints and one with fever; swelling of the legs associated with retention of sodium, chlorine, and water. Other reactions which disappeared despite continued therapy were, one leukopenia to 3,200 with 20 per cent granulocytes; four morbilliform rashes with itching; two nausea and vomiting; and one swollen, sore submaxillary gland. Bartels[6], in eleven patients with severe hyperthyroidism treated for from one to six months, encountered no toxicity. Paschkish, Cantarow, Rakoff, Walkling, and Tourish[21], observing twenty-one cases, noticed the appearance in three of rash, fever, arthralgia, leukopenia, jaundice. Soffer, Kert and Gabrilove[33], in twenty-five patients, encountered drug toxicity in five; two had mild leukopenia, one rash and fever, one edema, one conjunctivitis. Reveno[26], in recording his experience with nine cases, observed, in one instance, enlargement of the thyroid due to hemorrhage into its substance.

It is obvious that consideration of toxicity must be carefully weighed against certain undoubted advantages. Agranulocytosis and bleeding tendency would seem to be the most serious reactions so far encountered and it becomes an obvious requirement that patients be kept under close watch. A fatal case of agranulocytosis due to thio-uracil, has already been reported.[12]

Effect on Thyroid and on Eye Signs.—Since thio-uracil typically reduces colloid and results in cellular hyperplasia, increase or decrease in size of the gland might be expected, depending on the resultant of these opposing factors. In our cases no definite size changes have been noted in the gland. In two of them, however, there has been an increase in the bruit heard over the gland during the period when clinical improvement was manifest. Williams and Clute remark that changes in the gland are not easy to discern; they recorded enlargement in eleven of their seventy-two cases; the majority of the others, however, decreased in size. The possibility of en-

largement will, therefore, apparently have to be given practical consideration chiefly in cases where the gland has already encroached upon some surrounding structure. In our cases, eye signs have either improved or become no worse during treatment. Williams and Clute found that simple stare improved but that malignant exophthalmos which was originally present in five patients became worse. They used desiccated thyroid in the treatment of these. In other cases also thyroid medication has been used to induce a reduction of size in the thyroid gland. The rationale in both circumstances is the same, depending on the belief that circulating thyroid hormone keeps the pituitary in check. It is consistent with the observation[22] that administered thyroid does not produce eye signs whereas thyrotropic hormone does. The concept of using thyroid substance to control pituitary function has some reasonableness in the light of the studies by Means, Hertz and Williams[20] of dissociated oculopathy in Graves' disease. In this connection, too, it is interesting to note that Rienhoff[29,30], having observed the ability of administered thyroid to shrink colloid goiter, administered it to nine hyperthyroid patients; this treatment resulted in a reduction of the signs and symptoms of hyperthyroidism with shrinkage of the gland and an average fall in basal metabolic rate of 20 per cent. All patients did well postoperatively.

Thyroidectomy After Thio-uracil.—The use of thio-uracil in preparation for operation, judged by reports in the literature and in our own cases has, in general, given good results. The advantage of lowering the basal metabolic rate to normal or near normal has been reflected in smooth operative and postoperative courses. The main disadvantage so far encountered has been that in a few cases the gland has bled more easily than might otherwise have been expected; this difficulty has not been followed by any untoward postoperative results.

Histologic Changes.—In general[23,38], the gland, after thio-uracil therapy, shows hyperplasia with diminished colloid; but the picture varies considerably. In a few cases this appearance is quite striking. In others, particularly those previously treated with iodine and having a slow response to thio-uracil, the gland may present a picture of involution with minimal hypertrophy. Rawson, Evans, Means, et al.[23], did control studies in five cases, biopsies being taken before thio-uracil was started for comparison with the operative specimens. In three of these five cases there was no significant increase in the height of the cells as a result of the thio-uracil therapy; in the other two, there was a definite increase. All of these five patients responded well but the two which showed the increase in cell height had had the more prompt and complete clinical improvement.

Discussion

The foregoing presentation omits certain observations entirely, but does mention the chief points which are thought to bear significantly on the advisability or otherwise of thio-uracil therapy in hyperthyroidism.

Considering first those patients not previously treated with iodine, it would appear from the data of Rawson, Evans, Means et al.[23] on thio-uracil, compared to the iodine response curve of Means and Lerman[19], that for both agents approximately the same depression of basal metabolic rate is obtained in the first ten to twelve days. The difference would appear to be that by waiting longer, i.e., up to three to six weeks, thio-uracil, with great probability, will produce a more complete remission with presumably some lowering of subsequent operative risk. If the patient is ambulatory and can visit the doctor frequently, this waiting period may be worth while. Against this definitely must be put the possibility of toxic reactions. The incidence of toxic reactions necessitating withdrawal of the drug is apparently more than 10 per cent. For safety's sake, the visits to the physician should be at least weekly and should include a white and differential cell count and a cuff test. It will be noted from Figure 2, that even a weekly check might not have sufficed to catch the white cell depression in sufficient time. Although it is to be admitted that dependence on iodine has hazards of its own, the wisdom of using thio-uracil, instead of iodine in these cases, cannot be considered as established.

For cases previously treated with iodine there may, in many instances, be no choice and it is here that thio-uracil seems to have made the best contribution so far. It has been a welcome expedient in cases complicated with cardiac decompensation.

The advisability of continuous thio-uracil thera-

py to maintain a remission obviously requires further evidence. The hope of continued remission after eventual withdrawal of thio-uracil remains still a hope. The only reasonable attitude at the present time would seem to be one of caution. On the other hand, there is no call for pessimism because of the drawbacks encountered in this new line of therapy. The suggestion[10] that liver extract may cancel out the blood cell depression is a reasonable one and needs investigation. It is possible that an improved drug with lower toxicity may be found. The use of iodine therapy with or following thio-uracil therapy has not had, as yet, an adequate trial.

Summary

The literature on the experimental use of thio-uracil in the treatment of hyperthyroidism is briefly reviewed and illustrative cases from the experience at the University of Minnesota Hospitals are given. Although the ability of this drug to produce remission in hyperthyroidism is well established, particular attention is drawn to toxic reactions and to the necessity of keeping under close observation all patients who receive the drug. The advantages and disadvantages of its use are discussed.

The cases presented have been from the services of Dr. C. J. Watson, Dr. Irvine McQuarrie, and Dr. O. H. Wangensteen, whose co-operation, together with that of their staffs, is gratefully acknowledged.

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CLINICAL-PATHOLOGICAL CONFERENCE

MINNEAPOLIS GENERAL HOSPITAL

A. J. HERTZOG, M.D., Pathologist

MULTIPLE MYELOMA

Report of Three Cases

DR. HERTZOG: Today we are taking up three cases of multiple myeloma. I will briefly discuss some of the clinical and laboratory aspects and Dr. Schleicher will speak about the myeloma cells. Dr. Riley will give the history of the first case.

DR. RILEY: This is the case of an eighty-five-year-old white man who entered the Minneapolis General Hospital on September 27, 1943, with complaints of nosebleeds and weakness. He had had these symptoms for the past two years. The nosebleeds gradually increased in frequency. Physical examination revealed a poorly nourished white male whose pulse was 86, blood pressure 160/90 and temperature 96 degrees. Examination of the head and neck was essentially negative. The chest showed a flaring of the rib margins. The heart was slightly enlarged with a systolic murmur at the apex. The liver, spleen and lymph-nodes were not palpable. There was no edema of the extremities. Neurological examination was essentially normal. Laboratory examination on admission revealed a hemoglobin of 33 per cent, with 1,690,000 red blood cells, 7,900 white cells with 75 per cent neutrophiles, 22 per cent lymphocytes, 2 per cent monocytes and 1 per cent eosinophiles. Bleeding time was more than ten minutes, clotting time two minutes, thirty seconds. The platelet count was 200,000 per cu. mm. Urinalysis on admission was negative except for one plus albumin. Serologic tests for syphilis were negative. Sedimentation rate was 167 mm. for sixty minutes (Westergren). Plasma proteins were 9.4 grams with 5.31 grams of globulin. The hemoglobin fluctuated between 33 and 40 per cent during his stay in the hospital. Blood morphology studies showed the red cell mean diameter to be 8 microns with marked anisocytosis present. Sternal biopsy was performed and the findings on this will be discussed by Dr. Schleicher. X-rays of the ribs, skull and long bones were taken. These will be shown by Dr. Stenstrom. The patient's course was frequently downhill, frequent nosebleeds occurred, he developed a septic temperature and expired on December 5, 1943. Permission for autopsy was refused.

DR. HERTZOG: Do you know what gave the lead to the diagnosis of multiple myeloma in this case?

DR. RILEY: All unexplained anemias that enter the hospital have sternal aspirations of the bone marrow. The sternal puncture made the diagnosis.

PHYSICIAN: I think you could consider multiple myeloma without the bone marrow findings in view of the high plasma proteins of 9.3 grams, particularly the elevated globulin fraction of 5.31 grams.

DR. STENSTROM: X-rays are a great deal of help in diagnosing multiple myeloma. Note the rounded areas of decreased density in the skull. I do not think from this film alone one can make a diagnosis, as the areas are not sharply demarcated. You must not confuse diploic markings. You also have to consider metastasis from a hypernephroma. The ribs show decalcification with a tendency towards punched-out areas. Occasionally all one gets in multiple myeloma is osteomalacia and osteoporosis. The areas have to be sharply reamed out to be diagnostic. Another favorite site for multiple myeloma is the lumbar spine. The dorsal spine in this case shows generalized osteoporosis with a tendency towards rounded areas, but not sufficient to be certain of the diagnosis. We do not have a picture of the lumbar spine. The femur is fairly normal. One area in the upper end of the radius is quite sharply demarcated. In conclusion, we have nothing except two punched-out areas in the skull and one area in the radius with generalized decalcification of the bones.

STUDENT: Would you make a definite diagnosis of multiple myeloma from the x-ray findings alone?

DR. STENSTROM: I would not. One must correlate the x-ray findings in this case with the laboratory work.

PHYSICIAN: I thought there was something in the long bone that was characteristic of multiple myeloma that distinguished it from hypernephroma metastasis?

DR. STENSTROM: Multiple myelomas have a tendency to expand the cortex at times without going through, while hypernephromas tend to follow the path of least resistance rather than expand the cortex of the bone. However, this distinction is not always too reliable.

DR. HERTZOG: We have two other cases. The first one is a fifty-eight-year-old woman who was admitted to St. Barnabas Hospital in 1942 for a cholecystectomy. The gall bladder was found to contain stones and old chronic inflammatory changes. She was readmitted for a perineorrhaphy in August of 1943. At this time she was found to be anemic with 59 per cent hemoglobin (Sahli). Following the last operation she

ran an unexplained fever. An x-ray of her chest was taken. This showed an area of rarefaction in the right clavicle that was considered to be a bone cyst at the time. The anemia persisted but no attempt was made to find the nature of the anemia. She was treated with liver and iron but failed to show any improvement. She was readmitted to the hospital in August, 1944, with a history of weight loss of 50 pounds, persistent anemia and pain in the arm. The technician had difficulty in making a blood smear on this patient because of the greasy nature of the blood. The red cell count was 2,780,000 and the hemoglobin was 50 per cent (Sahli). The white count was 6,900. The anemia was a normochromic type and the red cells showed marked rouleaux formation. This and the greasy smear were recognized as common in multiple myeloma. Hence the urine was examined for Bence-Jones protein. The Bence-Jones protein was absent and we forgot about multiple myeloma. The urine showed one to two plus albumin. Blood urea nitrogen was within the upper limits of normal. The patient was referred to physiotherapy. An x-ray of the shoulder showed findings compatible with multiple myeloma. Other x-rays showed widespread involvement of the skeleton. A bone marrow aspiration was then done. This was typical of multiple myeloma. The total plasma proteins were found to be 11 grams with 6.7 grams of globulin. Hence the diagnosis in this case was arrived at more or less in a roundabout manner. The earliest symptom was anemia and pain in her shoulder. The patient is still living.

The second case was that of a sixty-one-year-old man whose principal complaint was weakness and weight loss. He had a persistent albuminuria with casts, but the blood pressure was normal. An intravenous pyelogram was attempted but the kidneys did not visualize as no dye was excreted. However, Dr. Russel Morse picked up the findings of multiple myeloma in the bones of the lower trunk. We then began to investigate the case from the laboratory standpoint. Bence-Jones proteins were also absent, serum calcium was 17 mg., serum phosphorus and alkaline phosphatase were normal. Dr. Stenstrom called attention to the fact that in multiple myeloma the bones show marked decalcification. You usually find an elevated serum calcium associated with an excess amount of calcium excretion in the urine. The normal alkaline phosphatase points to an absence of osteoblastic activity. The blood urea nitrogen was 56 mg. per cent and creatinine was 2.2 mg. per cent. The plasma proteins were normal; globulin was only 2.5 grams. This shows all cases of multiple myeloma do not have an elevated plasma protein. A bone marrow aspiration was done and the typical myeloma cells were found in the sternal marrow. The patient expired at home and no autopsy was obtained. It would have been interesting to see what the kidneys would have shown as it would seem, in view of the normal plasma proteins and absence of Bence-Jones proteins, that something else besides simple blocking of the tubules of the kidneys by casts was present.

Microscopic Study

Dr. Hertzog: This is a photomicrograph of the blood smear in the fifty-eight-year-old-woman from St. Barnabas Hospital. This gave us the lead to the diagnosis of multiple myeloma. Note the marked rouleaux formation in the red blood cells. This is not pathognomonic. It simply means that you have an excess amount of serum protein. This rouleaux formation may be so pronounced that it is difficult to cross-match the patient for transfusions because of this auto-agglutination. It is always suggestive of multiple myeloma, as multiple myeloma is one of the commonest causes of elevated plasma proteins. At times this auto-agglutination may be noticed in the veins of the retina with an ophthalmoscope. The next photomicrograph is the bone marrow of the same case. It shows over 50 per cent of the cells to be myeloma cells with an eccentric nuclei and marked basophilic cytoplasm.

Dr. Schleicher: When Dr. Hertzog showed me this slide, I ventured the opinion that the patient probably did not have Bence-Jones protein in the urine. This statement was made on the basis of the uniformity in size of the so-called plasma cells and deep blue stained cytoplasm. For some reason, the globulin in the myeloma cells during this particular phase of the growth of the tumor is not of the proper chemical composition to be secreted by the cell. When the cells secrete globulin, they become larger and vary in size. The cytoplasm appears to be vacuolated and stains irregularly. In my series, the type of tumor shown on the screen failed to show Bence-Jones protein in the urine. It appears to be a slow-growing type of tumor. Solitary types of myeloma produce much rarefaction of the bone and are easily picked up by the roentgenologists. The solitary types are of a high degree of malignancy. The myeloma cells arise from the reticulum of the bone marrow and have no connection with the ordinary plasma cell. This excellent colored photomicrograph made by Dr. Hertzog shows the development of the myeloma cells from a small lymphoid reticulum cell. It should be kept in mind that the activity of the tumor varies, and, therefore, one examination may fail to show Bence-Jones protein in the urine; a series of examinations may yield a positive specimen.

Dr. Hertzog: The history of multiple myeloma goes back many years. Bence-Jones in 1845 described the peculiar protein in the urine in cases of so-called mollities ossium. This peculiar Bence-Jones protein is found on heating the urine to 50 or 60 degrees. When the urine is brought to a boil, the precipitate disappears and only reappears on cooling. When albumin is present in addition to Bence-Jones protein, the two must be separated. Von Rustizky in 1873, gave the disease the name multiple myeloma. Kahler, in 1889, deserves the credit for connecting Bence-Jones protein with the disease and describing many of its clinical aspects. It is sometimes called Kahler's disease. Wright, in this country in 1900, showed the morphological similarity of the myeloma cells to plasma cells. The clinical aspects of the disease are quite varied. A frequent symp-

tom is painful back or bones in a middle-aged or older person. This is commonly called neuritis. Paraplegia occurs at times due to a lesion of the vertebral body pressing on the spinal cord. A pathologic fracture of a rib is always suggestive. At times the patient himself may notice multiple small tumors along various bones. An albuminuria with a normal blood pressure and especially with a hyperproteinemia is suggestive. The widespread use of x-ray picks up many of these cases. Unfortunately, Bence-Jones protein is only found in around 50 per cent of the cases. It may be higher if repeated attempts to demonstrate this protein in the urine is done.

PHYSICIAN: I would say well under 50 per cent of cases fail to show Bence-Jones protein.

DR. HERTZOG: I would like to ask Dr. Schleicher whether the few plasma cells found frequently in the blood smear in these cases of multiple myeloma have any diagnostic significance?

DR. SCHLEICHER: I do not think so. Plasma cells originate from many sources. If you mean myeloma cells, that is different.

STUDENT: What percentage of cases of multiple myeloma do you think can be picked up by a single aspiration of the sternal marrow?

DR. SCHLEICHER: With the exception of the rare solitary myeloma, I think you will pick them all up. I will show a photomicrograph of the bone marrow of another case. This color slide shows several myeloma cells with the characteristic globulin crystals of Bence-Jones protein within the cytoplasm of the cell. The crystals are either needle-form or rhomboid. This was a highly malignant tumor. Bence-Jones protein was found in the urine daily. Wintrobe and von Bensdorff et al. observed globulin crystals in the plasma and serum in their cases. One can estimate to some extent the clinical degree of malignancy by the amount of secretory activity of these cells. I have already stated that the myeloma cells arise from the reticulum. This slide shows myeloma cells arising from vascular adventitial cells considered undifferentiated reticulum cells. The scattered small groups of myeloma cells show the disseminated character of the growth. This is why a single aspiration of the marrow will yield diagnostic cells. Of course, in the rarer solitary forms, one must aspirate at the site of the tumor. Multiple myeloma is a distinct clinical entity and a neoplasm.

DR. HERTZOG: Is there a close connection between multiple myeloma and leukemia?

DR. SCHLEICHER: Yes, there is. Sometimes when the myeloma cells enter the circulation due to a rupture of the sinuses of the marrow from the pressure of the growing tumor, the disease resembles leukemia.

DR. HERTZOG: All of the elevated serum globulin in these cases is not entirely of the Bence-Jones type, is it?

DR. SCHLEICHER: That is not known. Investigators differ on this question. Many believe that globulin is formed in the bone marrow as well as in the liver. This slide shows an intermediate form of plasma cell observed in the bone marrow of a case of myeloid leukemia. This type of cell is believed by some investigators to produce globulin under physiologic conditions. In myelogenous leukemia there is occasionally a high serum globulin and a trace of Bence-Jones protein in the urine. Whether this intermediate plasma cell secretes the globulin is a question still to be answered. I have observed no crystals in this type of cell.

DR. RILEY: Have you attempted to find these globbulin-producing cells in the liver and spleen?

DR. SCHLEICHER: Up to date I have not been successful.

DR. HERTZOG: Dr. Schaaf, would you like to make any comment?

DR. SCHAAF: We see only about one case of multiple myeloma in three years, and I do not have anything to add to this discussion. How many cases of multiple myeloma do you see in this hospital?

DR. SCHLEICHER: We saw three cases in one and one-half years.

PLASMA AND TISSUE PROTEINS APPEAR INTERCHANGEABLE

Plasma and tissue proteins should no longer be considered as distinct entities. Evidence cited editorially in the Winter, 1945, issue of *The Journal of Parenteral Therapy* strongly suggests that there is a continuous and rapid interchange—or traffic—between them. Under conditions of inadequate or restricted protein intake, 1 Gm. of plasma protein (albumin) is lost for every 25 to 30 Gm. of tissue protein. The same ratio holds true when the attempt is made to replace plasma protein and tissue protein by restoring an adequate protein intake. In patients with serious protein depletion owing primarily to malnutrition it is highly impractical to make use of human plasma or serum transfusion.

CLINICAL-PATHOLOGICAL CONFERENCE

ST. LUKE'S HOSPITAL—DULUTH
ARTHUR H. WELLS, M.D., Pathologist

Report of Case

DR. T. O. YOUNG: A thirty-four-year-old white male mechanic was found to have an intrathoracic shadow suggestive of a tumor during a routine x-ray examination by the St. Louis County Mobile X-ray Unit five months before his death. It was then learned that for the past two or three years he had had a hacking cough occasionally productive of clear, serous sputum. He smoked from one to two packages of cigarettes a day. There had been mild aches during the past few months with twisting and prying sensations over the right scapular area. There was no loss of weight. The physical examination was entirely normal excepting for bronchial breathing in a small area posteriorly over the right lung. There were also a few crepitant râles in the bases of both lungs. His weight was 230 pounds. Blood pressure was 130/84 and routine laboratory studies were essentially normal. On the eleventh day before his death a tumor mass about the size of a goose egg was removed by a transthoracic posterior route by Dr. T. J. Kinsella. The mass was attached to the parietal pleura at the level of the third rib posteriorly on the right side. It protruded almost entirely into the pleural cavity. The patient appeared to be doing well excepting for a low-grade fever between 100° and 101° F., and a pulse rate between 110 and 120 per minute. Respirations were between 30 and 40 per minute during this period. There was a leukocytosis reaching a height of 24,000 and then subsiding to 16,000 on the day of his death. A low-grade anemia was also noted following the operation in spite of three blood transfusions of 500 c.c. each. There was frequent coughing sometimes productive of a small amount of mucoid sputum. On the third postoperative day aspiration of much mucus from his bronchi gave him immediate relief from a brief period of cyanosis and dyspnea. Restlessness and profuse perspiration were noted. Sulfathiazole grams 5 were used in the pleural cavity at the time of the operation and later 7 grams of sulfadiazine were given by mouth. Blood levels of the sulfonamides were not determined.

The patient's general condition was considered satisfactory until two hours before his death when he suffered from an attack of cyanosis, rapid, weak pulse and severe dyspnea. Respirations at this time reached 40 and pulse 120 per minute. After about fifteen minutes the attack subsided and he joked with the intern. However, shortly before his death he again developed severe cyanosis, rapid, weak pulse and dyspnea. He was rushed to the operating room for bronchoscopic aspiration only to die before the procedure could be accomplished.

Surgical Specimen

DR. A. H. WELLS: The resected mass was irregularly oval in shape, had a thin, distinct capsule and measured 4.5 by 6.5 by 7 cm. The site of attachment measured 4.5 cm. in diameter. The cut surface was gray, fibrous, glistening and almost homogeneous. Briefly, the microscopic picture (Fig. 1) was that of a lymph-node with quiescent lymph follicles and no sinusoids. Rare nerves, made up from 75 to 150 myelinated fibers, coursed through the mass. Dr. Paul Klemperer felt that it was a nonspecific granuloma. Dr. M. B. Dockerty favored an inflammatory lesion. Dr. A. C. Broders' diagnosis was chronic adenitis. Dr. J. S. McCartney and Dr. George Berdez thought it best to fit the diagnosis of Hodgkin's disease while Dr. E. T. Bell favored leukemic infiltration. My diagnosis was a simple benign lymphoma on the basis of a congenital defect or hamartoma.

The case is now open for diagnoses from the audience.

PHYSICIANS: "Death by pulmonary embolus." "Coronary thrombosis." "Spontaneous pulmonary atelectasis."

Autopsy

DR. A. H. WELLS: The essential gross findings were those of changes in the heart, an infected operative wound, and moderate evidence of toxic changes in the various organs. The heart weighed 390 grams. All four cavities were mildly dilated. The musculature of both ventricles was flabby, distinctly pale and slightly mottled. There was no coronary sclerosis. Pericardial and endocardial surfaces were transparent. The four valves were free from fibrosis and vegetations and were apparently competent. There was a grade II diffuse congestion of the lungs throughout all lobes, somewhat more severe in the dependent portions. A mild patchy injection in the large air passages was noted but practically no mucus or pus was found in them. There was no pulmonary emboli and no areas of atelectasis. The liver, spleen and kidneys were all distinctly swollen, flabby, friable and revealed other evidences of moderate toxic changes. There was a suppurative process on the pleural surface of the operative wound extending its entire length and involving adjacent tissues for a distance of about 1.5 cm. on either side of the wound margins. In this area there were a few small pockets of thick, grayish, purulent matter and some induration and injection of surrounding tissue. Cultures revealed staphylococcus aureus and nonhemolytic streptococci. Postmortem blood cultures tak-



Fig. 1. Atypical lymph node structure.



Fig. 2. Granular necrosis of muscle fiber with neutrophilic infiltration.

en twelve hours after death contained contaminating organisms.

The microscopic study confirmed the evidence of toxic changes in the liver, spleen, kidneys and heart. The bone marrow and lymphnodes were normal. Sections from various parts of the myocardium revealed scattered occasional small segments of muscle fibers (Fig. 2) undergoing a granular degenerative change similar to that of Zenker's hyaline necrosis associated with local moderate neutrophilic infiltration. There was a mild diffuse interstitial inflammatory reaction with occasional neutrophiles, monocytic cells and eosinophiles.

Discussion

Dr. R. J. Davies: This case has two unusually interesting features, that of the immediate cause of death and that concerned with the histologic nature of the intrathoracic tumor. I am satisfied that the patient died as a result of the acute diffuse myocarditis which was very likely caused by the sulfonamide therapy. It may be argued that a septicemia or toxins from the infected operative wound were the cause of this cardiac ailment; a theory which cannot be disproved. This is the third patient I have seen die of isolated myocarditis resulting from sulfonamide therapy.

Dr. A. H. Wells: The various sulfonamide drugs used in therapeutic dosage have been indicated as the cause of death through inflammatory, degenerative and necrotic changes in the kidneys, bone marrow, blood, skin, liver, blood vessels, lungs, brain and myocardium.[13,23] In the kidneys[17] the mechanical obstruction by crystals of the drugs in the tubules, pelvi and ureters as well as the degenerative and necrotic changes in the tubules leading to anuria and subsequent uremia are relatively frequent and generally appreciated as are the widely used prophylactic measures of adequate fluid intake and output, alkalinization of the urine, routine microscopic study of the urine for red blood cells, routine blood level studies and avoidance of the use of the sulfonamides in patients with renal disease.

Fitz-Hugh[7] ascribes aplastic anemia, hemolytic anemia, thrombocytopenic purpura, agranulocytic angina and leukemoid reactions to sulfanilamide. He feels that they are sensitivity reactions similar to those due to aminopyrine and other drugs. Agranulocytosis[2,9,12,21] resulting from sulfonamides and the approximately 70 per cent fatal outcome are well known and guarded against by running routine daily white blood cell counts. Death in these cases appears to be due to loss of resistance to infections and according to Nixon, Eckert and Holmes[18] may be avoided by reinstituting the sulfonamide therapy in cases where a serious infection establishes itself. Penicillin might also be used to protect these patients until the infection subsides. In several reported cases of agranulocytosis autopsies revealed

a complete absence of granulocytes in the bone marrow with an arrest of maturation of the precursors of the granular series. In the rare cases of death resulting from acute hemolytic anemia[14,19] there has been found an erythropoietic hyperplasia of the bone marrow. Milder forms of hemolytic anemia are quite common. Fortunately anemias due to sulfonamides improve rapidly after discontinuance of the drug. Daily red blood cell counts are essential to avoid this complication. Skin reactions are indeed common while deaths as the result of severe exfoliative dermatitis[11] must be extremely rare.

Among the rare and probably less widely known complications of sulfonamide therapy, leading to death, are those lesions involving the liver, blood vessels, lungs, brain and myocardium. There have been described lesions from the liver varying from mild acute hepatitis with varying degrees of degenerative change of liver cells to acute yellow atrophy with extensive necrosis of parenchymal tissue.[1,6,10] Hyperbilirubenemia and the resultant jaundice are expected laboratory and clinical manifestations. A punch biopsy in a recent case proved the diagnosis of diffuse toxic hepatitis in one of our patients and saved the woman a surgical exploration. Periarteritis nodosa type of reaction involving the lungs, liver, spleen and kidneys has been described by Rich[20] and Duff[4] as resulting from sulfo therapy in a previously healthy man with a fractured tibia and fibula. Merkel and Crawford[16], also Lederer and Rosenblatt[15] described four deaths each occurring after sulfathiazole therapy in which there were focal areas of necrosis scattered through the lungs. No bacteria were found. The clinical manifestations of cerebral injury as the result of sulfonamides have included dysmorphopsia, aphasia, agraphia, stammering, toxic psychosis, peripheral neuritis, encephalomyelitis, myelitis, optic neuritis, transitory myopia, meningeal signs, blindness and convulsions. These symptoms and signs generally subside with discontinuance of the drug and death is rare,[5,22] There have been found areas of softening with ballooning of the myelin sheaths, proliferation of microglial cells, focal areas of necrosis and perivascular hemorrhages. Hyperplastic or necrotic changes in the endothelium of blood vessels of the brain may be the precipitating factor of many cases showing cerebral manifestations as the result of interference of blood flow.

Although there had been demonstrations of myocardial changes as a result of sulfonamide therapy in experimental animals, it remained for French and Weller[8] to discover the frequent (approximately 50 per cent) occurrence of a diffuse myocarditis in patients receiving any of the commonly used sulfonamides. Age and sex were not important factors. The dosage varied from 5 to greater than 200 grams over a period of from a few hours to several months. They found 126 cases of diffuse myocarditis in a properly selected group of postmortem examinations. Sulfonamide therapy was the only common factor in the group. The lesion was a perivascular infiltration by mononuclear phagocytes and eosinophiles. In more severe cases the infiltration became diffuse. Segments of cardiac muscle fibers underwent Zenker's hyaline degeneration. Animal experiments verified their conclusions as to the relationship between the sulfo drugs and myocarditis. Dozzi[3] described alterations in electrocardiograms of patients receiving sulfonamides.

Summary

An acute isolated myocarditis followed the use of sulfathiazole and sulfadiazine in the care of a patient with an intrathoracic lymphoma. Besides the comparatively frequent deaths from kidney complications and agranulocytosis resulting from sulfonamides there are rare fatalities because of lesions in the skin, brain, red blood cells, lungs, liver and blood vessels. The relative importance of acute myocarditis caused by sulfonamides needs further appraisal.

Diagnoses: (1) Intrathoracic lymphoma; (2) Acute sulfonamide myocarditis; (3) Infected operative wound of thorax; (4) Toxic changes in liver, spleen and kidneys.

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HISTORY OF MEDICINE IN WABASHA COUNTY

(Continued from November issue)

Biographical Dictionary

Francis Henry Milligan was one of the first and one of the most honored physicians in the state. He was born in Philadelphia in 1829, graduated from Jefferson Medical College in 1851, practiced for two years in Saint Louis and then located in Wabasha where, with the exception of one year spent in Hastings (1857), he remained until his death in December, 1888. He was the first physician in Wabasha, and his practice covered a very wide extent of territory. In addition to his professional duties, he served the county in the early days of its organization as treasurer (1853-60), in place of C. Shiveley, who had been elected, but who had never qualified; as sheriff (1854), in place of Levi Murphy, who was not a resident of the county; and as register of deeds (1855), when he finished a term for which Alexis P. Baily had been elected. During the Civil War, he served as assistant surgeon of the Third Volunteer Regiment of Minnesota Infantry and later as assistant surgeon in the Tenth Regiment. For many years he served as Wabasha city physician and as a county physician. He was active in local Democratic politics. He was appointed a United States pension agent, was president of the Mississippi Road, Bridge and Ferry Company, incorporated in 1877, and a member of the military Order of the Loyal Legion. He was elected mayor of Wabasha (1879) and was also a representative of the state legislature (1887).

In 1860, Doctor Milligan tried to interest practitioners in Wabasha County and vicinity in organizing a medical society. A fee table was adopted but no real organization was formed at that time. He was a charter member, later, of the Wabasha County Medical Society and a member of the Minnesota State Medical Association. He was president of the county organization in 1869-70 and president of the state organization in 1876-77.

Among articles, of which he was the author, were "Fracture of the Skull and Loss of Brain," published in the *Cincinnati Lancet and Observer* (May, 1867), and, in the same journal, the article entitled, "Will Uterine Leucorrhoea or Purulent Discharge from the Womb or Vagina, Produce Gonorrhoea?" (Oct., 1866).

W. F. Milligan, son of F. H. Milligan, was born in the town of Wabasha in 1870. He located in Millville to practice medicine following his graduation from the Ohio Medical College, Cincinnati, in 1892. In 1895 he moved to Wabasha where he soon became recognized as one of the leading physicians. He served on the pension board, and was a member of the Wabasha County Medical Society, and the state medical association. In 1896 he was elected a representative to the state legislature. In 1898, when the St. Elizabeth Hospital was opened in Wabasha, Dr. Milligan was put in charge.

In 1900, Governor Lind appointed him a member of the commission to investigate and direct the management of the state insane asylums. He died in 1905.

Benjamin F. Mott came to Lake City in 1887 from Fergus Falls. He was a member of the pension board in both towns. He received his medical training from the Eclectic Medical Institute in Cincinnati, from which he was graduated in 1874. He left the county about 1894.

E. S. Muir practiced in Plainview from 1894 until 1898 when he moved to Winona. He was a member of the Wabasha County Medical Society.

R. N. Murray, Lake City, began to practice about 1868; but for a number of years, he devoted much of his time to the milling business. He was a charter member of the Wabasha County Medical Society, serving as president in 1871, and became affiliated with the state association in 1872. He left Minnesota in 1875.

G. Nicolai practiced in Lake City in 1878.

Edward A. Patton, son of George R. Patton, graduated from the Miami Medical College in 1880 and practiced for two years in Lake City with his father before moving to Minneapolis.

George R. Patton was born in Allenville, Pennsylvania, in 1834. He received degrees from Miami Medical College (1855) and the Medical College of Ohio (1858). He was connected with Miami Medical College, was the author of a number of medical brochures, invented some instruments, and became well known as a physician and surgeon. His career in Lake City, from 1871 until his death in 1909, was largely that of a retired practitioner, doing skillfully the work which came his way but not reaching out for more worlds to conquer. He was elected to the county medical society in 1871 and the state association in 1872. The *Cincinnati Lancet and Observer* (April, 1876) contains an address by Doctor Patton before the Miami Medical College, Cincinnati, at its annual meeting.

J. F. Percy came to Mazeppa from Oronoco, Minnesota, about 1885 and moved to Los Angeles about 1890.

L. C. Perrine, an eclectic physician according to his card, located in Lake City in 1861. He ran a drug and variety store for a number of years.

M. T. Perrine was associated in business with the above. It is doubtful if he practiced medicine.

D. T. Phillips practiced in Lake City in 1876. He was a homeopath.

P. C. Remondino, a graduate of Jefferson Medical College, began to practice medicine in Wabasha in 1865. He had formerly been a surgeon in the army during the Civil War. For two years he was a partner of F. H. Milligan, with whom he had previously studied. He served as coroner, city physician, and chief of police. In 1867 he started a drug store in the city to which he devoted a share of his time. The following year he announced that he would give his attention to the homeopathic treatment of diseases. This was prob-

ably in answer to local demand for a practitioner of that school. He was a charter member of the Wabasha County Medical Society and became affiliated with the state society in 1871. He left Wabasha in 1874 and later settled in California.

It is interesting to note that he served as a surgeon for about six months in the French army during the Franco-Prussian war.

W. H. Rice was a homeopathic and hydropathic physician who practiced in Lake City in 1861.

F. L. Richter graduated from a German university and opened an office in Wabasha in 1886 where he remained for several years.

D. H. Roberts practiced in Plainview from 1870 until 1872, when he went to Owatonna.

H. N. Rogers began to practice in Zumbro Falls about 1878. In 1800 he was elected to the county medical society. About 1886 he left Wabasha County, and later practiced in Farmington, Dakota County.

O. Schmidt was a German physician and oculist who settled in Wabasha in 1874.

J. E. Schneider practiced in Lake City for a short time during the nineties. He was a member of the county medical society.

C. Q. Scoboria practiced in Mazeppa from 1892 until about 1896. He was a member of the county medical society.

J. A. Slocumb came to Minneiska in 1895, and after a few months moved to Plainview where he practiced in partnership with Dr. Tefft, and later with Dr. Muir. He was a member of the Wabasha County Medical Society, and was elected president of the organization in 1900 and twice thereafter. He remained in Plainview, where he became prominent as a physician and citizen. He died July 3, 1941.

Charles Snyder practiced in Wabasha in 1865.

H. W. Spafford began to practice in Lake City in 1865. He was a charter member of the Wabasha County Medical Society and its president in 1872. In 1874 he moved to Alma, Wisconsin. He received his training from Queens College, Canada, and the Ophthalmic Infirmary of New York. He was born in Ontario, Canada, April 27, 1828. He died November 24, 1877, and is buried in Lake City.

E. C. Spaulding, a graduate of the University of Vermont, formed a partnership in 1868 with G. W. Green, an eclectic, in Lake City. The next year he became the editor of the *Lake City Leader* and devoted most of his time to newspaper work until the fall of 1874. Apparently he left Lake City soon afterwards. In 1878 he was in the drug business at Northwood, Iowa.

C. C. Stauff and **F. H. Stauff** ran a drug business in Wabasha, in 1879, which they moved after a year or so to Lake City. Apparently neither was actively engaged in the practice of medicine.

J. Jerome Stone of Wabasha served as an assistant surgeon during the Civil War, studied with P. C. Remondino, and graduated from Rush Medical College in 1873. He did not immediately begin to practice in Wabasha and several times he left for short periods, intending to locate elsewhere. In 1874 he was elected to membership in the county society, and the following year to the state medical association. He practiced with his brother-in-law, F. H. Milligan, from 1880 until the spring of 1882. He served as president of the school board and was the proprietor of a drug store in Wabasha.

Nathaniel S. Tefft came to Minneiska in 1855 and moved to Plainview in 1860. He was one of the first physicians in the county and he remained there, a well-known figure, until his death half a century later. He graduated from the Eclectic Medical Institute of Ohio in 1852.

Doctor Tefft took an active part in the life of his community. In the early days, he was an officer in the local agricultural society, lectured before the Wabasha Literary Society and belonged to the Old Settlers Society. He held many offices in the Plainview I.O.O.F., serving as Grand Master of the Grand Lodge of Minnesota I.O.O.F. from 1884 to 1888. Throughout his career, he was very active also in local Republican politics, attending county and state conventions. He was very much interested in the labor unions. He was a member of the House of Representatives in the first state legislature, and was elected again in 1861. In 1871 he was a member of the Senate.

He was one of the first members of the Wabasha County Medical Society and served as president in 1871, 1888 and 1895. He was also a member of the state association (1871). He served many times as county physician, and in 1884 he was appointed a trustee of the Minnesota Hospital for the Insane. He died January 20, 1905.

John Tenny received his degree from Rush Medical College in 1899, and began to practice in Kellogg the following year.

Edgar Thorn, a homeopathic physician, practiced in Wabasha from September, 1878, until the following May, when he moved to New York.

Mrs. M. S. Tilson, a homeopathic physician, practiced in Lake City. She came to Lake City in 1862.

F. C. Titzell came to Lake City in 1891 from Ottawa, Illinois. He belonged to the homeopathic school. In 1894, and again in 1895, he was elected mayor of the city. He left in 1896, to accept a teaching position in surgery at a homeopathic medical school in Chicago.

Charles W. Tinker practiced in Wabasha for a short time before moving to Stewart, Minnesota, in 1879. He was a graduate of Jefferson Medical College and was elected to the Wabasha County Medical Society and the Minnesota State Medical Association in 1878.

E. A. Tupper practiced with Doctor Milligan in Wabasha from 1875 until 1878, when he moved to Zumbrota, Goodhue County. In 1875, he was elected to the Wabasha County Medical Society and to the state association.

Frederick W. Van Dyke, Wabasha, graduated from Bellevue Medical College in 1875. He was for seven years a partner of W. L. Lincoln, and the

professional card which they published at that time read, "consultation in German or English." In 1879, he assisted Doctor Lincoln in the first laparotomy performed in the county. He was a member of the county medical society (1874) and the state association (1875).

C. D. Vilas graduated from the University of Vermont in 1846 and came to Lake City in September, 1856. He moved to Michigan for a short while but returned to Lake City. He served as city health officer and as a county physician for several years. He was a member of the Wabasha County Medical Society. He died at about eighty-five years of age in 1907.

John P. Waste came to Plainview about 1866. He had formerly been a surgeon in an Ohio regiment during the war. He was elected to the Wabasha County Medical Society at its first regular meeting, and was elected to the state association in 1871. He was active in Republican politics, a member of the school board, a member of the Plainview city council, and a member of the state Senate (elected in 1873). In the last named capacity, he introduced bills for the publication of mortgages and registration of births and deaths. He continued to practice in Plainview for many years. He was elected president of the county medical society in 1898. He died in 1906.

— **Ware** practiced with Dr. E. O. Baker in Lake City in 1876.

T. R. Watson began practice in Zumbro Falls about 1897. He was a member of the county medical society.

G. C. Wellner practiced in Wabasha in 1889, and moved to Red Wing. (See Goodhue County)

Isaac J. Wells was a charter member of the Wabasha County Medical Society. He practiced in the city of Wabasha for several years.

— **Westfall** was a homeopath who practiced in Plainview in 1865 and moved to Rochester the next year.

J. L. Whitmore lived in Wabasha but apparently did not practice medicine. He ran a drug store during the first few years of the sixties and later started a tin shop.

Mrs. Mary Whitney, known as a specialist in the diseases of women and children, practiced in Lake City in the seventies.

Wm. F. Wilson was born in 1864. He graduated from the Chicago Medical College in 1891. He spent two and a half years as resident physician at the state school for the feeble-minded at Faribault, and then located in Lake City in April, 1894. In 1896 he was elected secretary of the Wabasha County Medical Society, a position which he has held for nearly fifty years. He is also a member of the Minnesota State and the American Medical Associations. He was appointed on the board of pension examiners for Wabasha County in 1897 and again in 1914. He has been president of the Lake City Public Library Board since 1906. Some of his published papers and articles are as follows: "Causation of Idiocy and Feeble-mindedness" in the *Proceedings of the Second Conference of Corrections and Charities,* 1894; "Notes on Epilepsy," *Northwestern Lancet,* 1895, "Differential Diagnosis between Variola

and Varicella," *Northwestern Lancet,* 1900; "Report of a Case of Eclampsia," *Northwestern Lancet,* 1903; "Treatment of Diabetes Mellitus," *Journal-Lancet,* 1915; "Yeast Infection of the Throat," *Journal-Lancet,* 1916.

I. C. Woodford was a homeopathic physician and surgeon who moved to Lake City in 1877 and remained about a year.

J. W. Woodworth was a botanic physician in Lake City in 1861.

Of all the physicians mentioned in this historical sketch only three, so far as is known, survive. They are Drs. W. J. Cochrane and Wm. F. Wilson of Lake City and Dr. Leonard E. Claydon of Red Wing.

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*The article on the medical profession in this history was formally repudiated by the Wabasha County Medical Society at a meeting held in June, 1884.

President's Letter

APPRECIATION

I wish to take this opportunity to express to the membership of the Minnesota State Medical Association my great appreciation for extending me the honor of being made president of the Association during the past year.

The performance of the duties of this office has been made very pleasant because of the wholehearted co-operation of the membership as a whole.

I have attended as many of the county and district meetings as possible, but the difficulty of transportation during this wartime period has limited to some extent the carrying out of this part of my program.

It has been a matter of great satisfaction to see the widespread interest the medical men of the state have shown in the various meetings, in spite of their being busier and of having to travel many miles often, to these meetings. This is one of the duties that has been assumed by the older men in place of the younger colleagues who are serving with the armed forces. Their ranks are terribly thinned. Their hours and responsibilities are multiplied, but they are carrying on uncomplainingly. For the most part, Minnesota people have not suffered for lack of medical care when they needed it.

Many men who had retired or nearly retired from practice are back in full harness now —taking the night calls and the long trips they had relinquished to the younger men. To these men I offer a HEARTY SALUTE!

I wish to thank the chairmen and members of all the committees for the efficient manner in which they carried out their duties. We are also very proud of the extensive activities of the Woman's Auxiliary during this wartime period. I am sure the organization will continue this activity after the war emergency has passed.

Unless one has had some contact with the central office of this Association, one has no idea of the amount of work that is carried out by this agency. The staff, headed by our efficient Executive Secretary, Mr. Rosell, is one of the more efficient organizations of its kind. Without the help and experience of its members it would have been much more difficult to satisfactorily carry out the duties that fall to the President of the Association.

Before turning this page over to my successor, Dr. E. L. Tuohy, I wish again to thank all members for their hearty co-operation during the past year.



President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

THE PHYSICAL FITNESS PROGRAM

THE rejection of roughly a third of the draftees for military service has attracted public attention. In an effort to correct the situation, the President, in April, 1943, appointed a Committee on Physical Fitness in the administrative office of the Federal Security Agency. This Committee and its National Council on Physical Fitness presented a proposal to the American Medical Association to join in a program specially emphasizing the importance of physical fitness. This was accepted in June, 1944, and resulted in a Joint Committee on Special Emphasis for Physical Fitness.

Physical fitness has two rather distinct phases. One depends on physical education and the other on health. The medical profession is devoted to the subject of health and should wholeheartedly join in the Physical Fitness Program.

It was found that a large percentage of those who met the requirements for military service were not physically fit to make good soldiers. They were lacking in muscular strength, agility, and endurance, and required several months of training before they were in condition. There was evidence of need for improvement in the physical education even of recent high school graduates, 50 per cent of whom had had no such training the last two years of school. Too many were unable to swim, could not jump over a bar two feet high, or chin themselves seven times.

An analysis of defects which disqualified draftees ranging in age from eighteen to thirty-seven showed, according to Rowntree,* the following percentages of defects: manifestly disqualifying defects such as missing limbs, congenital deformities and obvious disabilities resulting from illness or injury, 10.5 per cent; mental disease, 16.6 per cent; mental deficiency, 13.8 per cent; other musculo-skeletal defects, 7.5 per cent; syphilis, 6.7 per cent; cardiovascular disorders, 6.5 per cent; hernia, 5.7 per cent; neurological defects, 5.1 per cent; defective vision, 5 per cent; hearing, 3.9 per cent, and teeth, 0.9 per cent. Overweight and underweight were together responsible for 1.5 per cent of rejections. The author calls attention to the fact that the incidence of defects per 1,000 men examined is a better index of the health and fitness of the young men of the country. Among all men examined during a six months' period, 1,583 defects per 1,000 men were recorded. Incidence rates for the chief defects appearing among these men were: eyes, 115.7 per 1,000; teeth, 140.3; cardiovascular defects, 100.4; skin defects, 115.8; defective feet, 145.0; musculo-skeletal defects, 101.3, and hernia, 64.8.

Medical science alone cannot prevent or cure many of these causes of disability. The prevention of certain inherited conditions depends on eugenics; of certain contagious diseases, on quarantine by health departments, as well as vaccination; of musculo-skeletal defects, on safety devices in industry, the home and in traffic; of syphilis, on morals and public education. Refractive errors in vision cannot be prevented, although they can be largely corrected by glasses. Hernia, which accounts for comparatively few rejections, can be corrected. Dental defects were the cause of relatively few rejections. There is room, however, for improvement, not so much in the quality but in the quantity of dental care received in our country.

So the Physical Fitness Program concerns not only physical education and medicine but all agencies concerned with the physical well-being of Americans from the cradle to the grave. These include athletics of all sorts for school children; golf, fishing, hunting and the like in which adults can participate. It includes every activity devoted to the prevention of disability through accident or disease. It involves also an educational program to inform the public of the desirability of physical fitness and health, the importance of prevention of those things which cause disability, and the possibility of correcting certain defects in the interest of greater fitness.

We have been discussing disabilities found in

*Rowntree, Leonard G.: Physical fitness for America. Hygeia, 22:744, (Oct.), 1944.

young men examined for military service. We have no similar gauge for determining the physical fitness of young women of the draft age. They are probably no more physically fit than the young men. The fitness program concerns them and also men and women beyond the draft age. It is asserted, and doubtless rightly so, that when men and women finish their schooling and enter their life work they become progressively less fit. They have less time to devote to keeping in trim and grow careless in health matters.

When a nation goes to war, physical fitness of the young men of the country is a vital matter. Fortunately or unfortunately, fitness in our modern civilization, though desirable, is not so essential. Whether a man can chin himself seven times, or jump two feet, is not so important, but maintenance of good health is important. We can recollect many examples of individuals who would be rejected for military service but have been outstanding in business, the professions and the arts. These men and women have triumphed in spite of physical disabilities.

Physical fitness is a worthy objective for the laity and the medical profession alike. Every activity that favors physical and muscular development merits support. On the other hand, man has his intellectual, moral and spiritual side in addition to his physical side. The youth movement in Germany was highly successful in developing the physical fitness of her young men and women. Lack of emphasis, however, on the moral and spiritual needs of her people has resulted in tragedy for Germany and the rest of the world.

KIDNEY DAMAGE FROM SULFONAMIDES

THAT care should be exercised in the administration of the sulfa drugs should be emphasized. Two types of damage may be caused by sulfonamides. The more common one is kidney damage caused by the precipitation of sulfonamide crystals in the renal tubules, kidney pelvis or ureters causing a reduction in urinary output which may progress to a state of anuria and even death. Less common is a toxic action of the sulfonamides on the kidneys producing oliguria, anuria, albuminuria and uremia without the usual symptoms of pain, hematuria or crystalluria. In these cases there is tubular necrosis in the kidneys and there may be focal necrosis in the liver spleen, heart and brain.

Hall and Spink* have issued a warning and have made a real contribution in an extensive review of the literature and an anlysis of twenty cases of kidney damage, some fatal, which have been encountered at the University Hospitals during the past three years.

According to the authors, kidney damage occurs in 1 to 10 per cent of individuals taking sulfonamides with no distinction as to sulfathiazole, sulfadiazine or sulfamerizine. Symptoms are most likely to appear after three or four days of medication; sooner after intravenous administration. They are more likely to occur after large doses but have been reported occasionally following small doses so that the physician should be on his guard. Even low blood concentration is no assurance that kidney damage will not occur.

It behooves the physician, therefore, to take certain precautions in the use of sulfonamides. They should not be prescribed unless indicated and the dosage should not be larger than necessary. For urinary tract infections 2 to 3 grams a day is sufficient. Even in pneumococcic pneumonia 4 to 5 grams of sulfadiazine and 2 to 3 grams of sulfamerizine daily will maintain a blood level of 8 to 10 mg. per cent in most patients, a level which is sufficient. When administering the drug, fluids should be forced so that the urinary output is at least 1,000 c.c. every twenty-four hours. Inasmuch as the drugs are more soluble in an alkaline medium, soda bicarbonate should be given at the same time in sufficient amounts to produce an alkaline urine whether it requires 4 or as high as 45 grams each twenty-four hours.

Daily urine specimens should be examined for evidence of blood or crystals. The urine should be centrifuged and examined immediately for the presence of crystals as their presence in cooled urine is not significant. Symptoms such as nausea or vomiting, rash, lumbar pain, oliguria or anuria are indications for stopping the medication and forcing liquids and soda bicarbonate. Lack of prompt response to such treatment may necessitate ureteral catheterization and lavage of the renal pelvis with warm water or soda solution.

As the authors point out, the sulfonamides have not been replaced by penicillin. They are less expensive and more efficient in the treatment especially of infections due to gram-negative or-

*Hall, Wendell H., and Spink, Wesley W.: Renal damage due to sulfonamides. Staff Meeting Bull. Hosp. Univ. of Minn., 16:75, (Nov. 10) 1944.

ganisms. Their use, however, requires certain precautions.

THE ARMY NEEDS NURSES

MISS Ruth B. Freeman, president of the Minnesota Nurses' Association, has received a communication from Major General Norman T. Kirk, Surgeon General of the Army, in which he announced that there is a critical shortage of nurses in the Army and that there has been a disappointing response to the call for 10,000 additional nurses who must be recruited within the shortest possible time.

Major General Kirk explains the need for more nurses is heightened by the fact that the Medical Department is required to activate during November and December and to ship overseas hospitals it had not expected to organize before next March. This is due, the General said, to the activity on all three fronts and the ever-increasing number of casualties which are now about 12,000 a week.

Doctors are urged not to ask private practice nurses to stay on cases longer than aboslutely necessary nor to expect extra service in the hospital. Hospital authorities are requested to make every possible adjustment and to save the strength and health of their nursing staff. If the best interests of the Armed Forces are to be served, the public must not make unnecessary demands upon nurses in or out of hospitals and must lend a hand as volunteer aides and orderlies.

Minnesota's quota for the period from July to January, 1945, is 312 nurses, and so far only 130 nurses have enlisted. A special effort must be made now to provide the nurses needed for the military campaign. Minnesota has always met its quota in the past, and we must not fail this time! Therefore, doctors and hospital administrators are being asked to reconsider their nurses' classifications and release those who are eager to go into service, if at all possible, to do so.

K.V.

CHRISTMAS SEALS

THE annual sale of Christmas seals is well under way. The sums raised in each state by the component units of the National Tuberculosis Association, of which the Minnesota Public Health Association is a part, provide the means for carrying on the fight against this still most important disease. The main function of the organization is the detection of cases and the dissemination of knowledge about tuberculosis. Sanatorium care has been provided almost entirely by tax-supported institutions.

While the mortality from tuberculosis has been reduced to about a third of what it was forty years ago when organized antituberculosis work began, tuberculosis still heads the list as the cause of death in the age group of fifteen to forty-five. Last year it claimed 56,000 victims.

Tuberculosis has increased in incidence as a result of the war. The deplorable lack of food and sanitation most in evidence in the formerly occupied areas of Europe and especially in China have resulted in increased ravages from tuberculosis.

There is every evidence that there will be a general increase in the mortality from tuberculosis in our own country in the next few years. Last year it increased 5.5 per cent in the states of New York, New Jersey, and Massachusetts. There was a slight increase even in Minnesota.

It has become more and more apparent that further reduction in the incidence of tuberculosis will depend on an extension of the Mantoux testing and x-raying of positive reactors—about 1 per cent of the half-million persons x-rayed by the United States Public Health Service in 1942-43 had significant tuberculosis. Only in this way can tuberculosis be detected early enough to be amenable to treatment. It goes without saying that there should be no letup in sanatorium care and follow-up of known tuberculous individuals.



MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

"WE ARE GOING TO STAND PAT . . ."

Columnists are predicting that the President will ask Congress for sweeping expansions of the social security system, including federal assistance for medical and hospital care, at the January session. Indeed, the President is reported as having said so at the first cabinet meeting held after the election.

Some adjustments of the social security act are generally considered as necessary and inevitable; but whether Congress is ready to accept so radical an expansion as sickness insurance is still regarded as doubtful, though the official endorsement of the Wagner-Murray-Dingell Bill by union labor is bound to carry weight, especially with Congressmen from districts where the labor vote was powerful in the last election.

In any case, the medical profession should not lose sight of the influence of labor policies upon social developments in the future. Nor of the genuine interest of labor leaders in the health of workers.

Union is on Record

As a sidelight on labor's policies, the paper read by Clayton W. Fountain, assistant to the vice president of the United Automobile Workers, CIO, at the last American Hospital Association convention, is illuminating.

As quoted in *Modern Hospital,* Mr. Fountain declared frankly, at that meeting, that UAW-CIO is on record in favor of the Wagner-Murray-Dingell Bill.

"I announce this," said Mr. Fountian, "as a matter of putting my cards on the table."

Labor is not anxious to see the state take over all social functions, he added; but in the matter of providing medical services he believes the private agencies have so far failed.

"Labor supports the bill because private agencies in the medical field are not doing a proper and adequate job of insuring health of the common people of America," he declared. "It is strictly a practical problem with us."

"Do a Better Job," Hospitals Urged

At the same time, Mr. Fountain urged his audience, composed of hospital executives and medical men, to go out and organize a better and less costly service than the government can supply.

"If you do that kind of job," he said, "you will have met the arguments for federal health insurance. Until then, we are going to stand pat on our support of the Wagner-Murray-Dingell Bill."

Mr. Fountain undoubtedly expresses the point of view of a substantial section of union labor and it is significant and encouraging that, unlike many other backers of the Wagner-Murray-Dingell Bill, he, at least, is not convinced that government can do the job better. He is interested only in achieving a generally available system of sickness insurance for workers.

In the home stronghold of UAW-CIO, medicine is already showing that voluntary insurance against costs of medical service is practical. The expansion to other states of systems comparable to Michigan Medical Service will perhaps provide the answer to labor's demands and, at the same time, protect the standards of medical service. It is obvious that the threat to high standards embodied in the invasion of government into medicine has not yet been made sufficiently real or impressive to leaders of union labor.

Meanwhile, several unions are experimenting with various types of health plans. The Health Institute established by Mr. Fountain's own organization at Detroit is one of the most recent.

Health Institute Expands

Service at the Health Institute is limited to diagnosis. For treatment, workers are referred back to their own physicians or to the company, in case of industrial accidents. In this respect it is unlikely either the Henry J. Kaiser Permanente Foundation, or the Health Center of the International Ladies' Garment Workers' Union in New York City. The institute is financed by local unions which make per capita contributions, ranging from three-fourths, to one-and-one-half cents per member per month. Nonsubscribing auto unions including some A F of L affiliates, are eligible to use the institute on a fee basis. It is reported that plans are on foot to invite such unions to participate on a per capita basis.

No plans are reported to have been made, as yet, to provide medical or hospital service; but officials have pointed out that the three-acre estate of Edsel Ford, just purchased at a cost of $51,000, would be an ideal site for a hospital.

Acting director of the Institute is Dr. Kingsley Roberts of New York's Medical Administration Service, long an advocate of prepaid group medical service.

CONSUMER EXPENDITURES FOR MEDICAL SERVICES

The Committee on Medical Economics is indebted to Dr. C. J. Potthoff of the University of Minnesota for the following analysis of recent official estimates of consumer expenditures for medicine.

Estimates of consumer expenditures for goods and services have recently been released by the Department of Commerce.† These estimates are doubtless of considerable interest to physicians concerned with economic aspects of medicine. Figures for the years 1929 through 1943 are included in the June, 1944, release.

Total consumer expenditures for goods and services in 1943 were $97,750,000,000. Of this amount $66,050,000,000 was spent for goods and $31,700,000,000 for services. Total expenditure for the same items in 1942 was $88,681,100,000.

During 1942 expenditures for medical care were $3,846,300,000. These figures do not include expenditures other than by consumers; salaries of nurses or physicians employed by government agencies, and expenditures for a city health department or a government hospital would not be considered here. The consumer expenditures were divided as follows:

Physicians	$1,094,400,000
Osteopaths	48,700,000
Chiropractors	42,200,000
Chiropodists and podiatrists	20,200,000
Dentists	540,000,000
Private duty trained nurses	59,800,000
Practical nurses and midwives	61,000,000
Miscellaneous healing and curative professions	20,800,000
Privately controlled hospitals and sanataria	628,500,000
Net payments to group hospitalization and health associations	29,700,000
Student fees for medical service	2,300,000
Accident and health insurance—net payments	163,900,000
Mutual accident and sick benefit association—net payments	32,700,000
Drug preparations and sundries	794,200,000
Ophthalmic products and orthopedic appliances	308,400,000

For comparison purposes, consumer expenditures in 1942 for selected goods and services are presented:

Food costs, including that for home consumption, estimated value of food consumed on farms, purchased meals including tips; but not including alcoholic beverages	$23,852,200,000
Housing expenditures, including rental value of rural and urban homes whether owner-occupied or not, and payments for rooms in hotels, clubs, schools, institutions	10,127,200,000
Household operation	13,294,300,000
Clothing, accessories, and jewelry	12,547,200,000
(Of the above, jewelry and watches cost $618,500,000)	
Recreation	4,639,900,000
(Of the above, $875,000,000 was spent on movies)	
Religious and welfare activities	1,232,800,000
Transportation	5,576,300,000
Tobacco products and smoking supplies	2,420,000,000
Alcoholic beverages	5,187,000,000

During 1943, according to a release of the Department of Commerce on March 22, 1944, consumer expenditures for beverage alcohol rose to more than six billion dollars or almost seven per cent of all expenditures for goods and services; the increase over 1942 was due to high unit prices rather than to increased consumption. Tobacco costs were about 2.7 per cent of consumer expenditures in 1942.

Percentage distribution of consumer expenditures are shown in Table I.

†Shaw, Wm. H.: Consumption Expenditures, 1929-43. Survey of Current Business, June, 1944.

The shifting tides of consumer expenditures since 1929 are shown in Table II.

TABLE I

Group	1929-41 average	1943 distribution
Food, alcohol, tobacco	30.2	37.4
Clothing, accessories, jewelry	12.8	15.1
Personal care	1.5	1.8
Housing	14.1	10.6
Household operation	14.5	13.6
Medical care and death expenses	4.9*	4.8
Personal business	4.0	3.0
Transportation	9.6	5.8
Recreation	5.2	5.1
Private education and research	0.9	0.9
Religious and welfare activities	1.6	1.5
Foreign travel and remittances	0.9	0.2

TABLE II

Year	Total consumer expenditures for goods and services (In millions of dollars)	Total for medical care	For physicians' services only (medical doctors)
1929	78,425.7	2,986.1	958.9
1930	71,081.1	2,893.5	923.9
1931	61,418.0	2,575.1	818.6
1932	49,672.4	2,174.2	660.7
1933	46,552.4	2,010.0	617.1
1934	51,998.3	2,200.7	678.0
1935	56,448.9	2,332.5	731.4
1936	62,272.1	2,527.0	820.4
1937	66,219.3	2,681.3	854.3
1938	63,302.8	2,690.1	832.8
1939	66,466.1	2,854.0	865.9
1940	70,806.2	3,029.8	912.8
1941	80,605.8	3,405.1	991.2
1942	88,681.1	3,846.3	1,094.4

*4.2 per cent for the various aspects of medical care and 0.7 per cent for death expenses.

NATIONAL CONFERENCE ON MEDICAL SERVICE

Postwar distribution of medical care will be the theme for the nineteenth annual session of the National Conference on Medical Service to be held in the Red Lacquer Room of the Palmer House in Chicago, Sunday, February 11, 1945.

Medical legislation, physical fitness program, rehabilitation of veterans, latest word from the Washington front, relationship between labor and farm groups and medicine are among the topics to be discussed by nationally known speakers who will appear on the program. Also listed on the program will be an open discussion on prepayment medical plans, the principal advantages and defects of both service and indemnity types of insurance being presented. Congressman Arthur L. Miller of Nebraska, author of the Miller Bill to unify certain health services, is to be among the speakers.

C. L. Palmer, M.D., Pittsburgh, is president of the conference, and W. L. Burnap, M.D., Fergus Falls, is a member of the conference executive committee.

All members of the American Medical Association are invited to attend. Programs will be ready January 1, and may be obtained by writing Cleon A. Nafe, M.D., secretary, National Conference on Medical Service, 822 Hume Mansur Building, Indianapolis 4, Indiana.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

J. F. DuBois, M.D., Secretary

Minneapolis Quack Sentenced to One Year Workhouse Term

Re: State of Minnesota vs. Frank J. Brady, alias Frank Bateman

On October 27, 1944, Frank J. Brady, alias Frank Bateman, fifty-nine years of age, entered a plea of guilty in the District Court of Hennepin County to an information charging him with the crime of practicing healing without a basic science certificate. Brady was sentenced by the Hon. Vince A. Day, Judge of the District Court, to a term of one year in the Minneapolis Workhouse.

Brady was arrested on September 10, 1944, following a joint investigation by the Minnesota State Board of Medical Examiners and the Minneapolis Police Department. It was learned that Brady was having women come to his apartment at 3519 Emerson Avenue South, Minneapolis, under circumstances indicating that Brady had returned to the illegal practice of medicine or criminal abortion. Two women were found at the place, one of whom stated that she had paid Brady $150 for an abortion but that because of the defendant's constant intoxication he was unable to proceed with the work. The police seized various medical and surgical instruments and other equipment used in the performing of abortions, including forty-eight catheters. Brady's case was continued several times and on one occasion he failed to appear in Court. Judge Day forfeited Brady's bond and issued a bench warrant for his arrest. Upon being brought into Court, Judge Day increased Brady's bond to $3,000 from $1,000, the amount originally set.

Brady has a long criminal record dating back to 1922, when he was convicted of grand larceny in the second degree at Saint Paul, for which he served thirty-one months in prison. In October, 1931, under the name of Frank Bateman, he pleaded guilty to a manslaughter indictment in Minneapolis, following the death of a woman from criminal abortion. Brady served six years for that offense. In July, 1941, Brady was sentenced to serve one year in the Minneapolis Workhouse for practicing healing without a basic science certificate. He claims to be a bartender by occupation.

Minnesota Academy of Medicine

Meeting of May 10, 1944

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Minnesota Club, Saint Paul, on Wednesday evening, May 10, 1944. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the President, Dr. Walter Camp.

There were forty-seven members and three guests present.

Minutes of the April meeting were read and approved.

Dr. A. R. Colvin read the following Memorial to Dr. Arnold Schwyzer and a motion was carried that this be published in the Proceedings of the Academy and a copy sent to Dr. Schwyzer's family.

ARNOLD SCHWYZER, M.D.
1864—1944

Dr. Schwyzer was born in Zurich, Switzerland, in 1864. After six years in college, he undertook the study of medicine, graduating at the University of Zurich in 1888. He served one year as assistant in the County Hospital at Glarus, and for a short time as assistant in the Surgical Clinic of Korenlein, and finally three years at the obstetrical and gynecological clinic at the University of Zurich.

During a visit to Edinburgh, he met the American Consul to whom he presented a letter of introduction from a prominent St. Paul citizen, a friend of his family who had lived with them in Switzerland during his college term. The American Consul, knowing of his intentions to come to the United States, advised him to come as a highly-trained surgeon else he would just become another doctor. The soundness of this advice is evident even today. In those days, numbers of American doctors embarked upon journeys of study in the older centers of medical education in Europe, to round out their training. His was the advantage of being taught by great teachers and of being associated with them in hospital work during his formative years. The inspirations derived from early association with great men in medicine cannot be overestimated.

Because of these advantages, he was at once recognized and generously acknowledged by a group of men in Saint Paul, who, although lacking laboratory training and experience, were men of great spirit and high ideals, sound clinicians, and fine surgical capacity and judgment. Dr. Schwyzer soon recognized this and became a peer among a group of men who had become nationally known for their outstanding spirit of ethics, kindliness and helpfulness to young men.

The recognition thus early obtained soon extended over a much wider area than his own locality. He became a member of (1) The American Surgical Association, (2) American College of Surgeons, in which he belonged to the founders' group, (3) Minnesota Academy of Medicine, (4) Western Surgical Association, (5) American Medical Association, (6) Minnesota State Medical Association, (7) Minnesota Pathological Society, (8) Ramsey County Medical Society, and (9) Swiss Surgical Society.

He was awarded the medal of the Minnesota Academy of Medicine in 1929, the first and only medal given for outstanding contributions to the organization.

He early acquired a large surgical practice which continued to grow year by year. He was an indefatigable worker. His daily routine began at the hospital at 7:00 a.m. He was an individualist in his work—and entitled to be this—and the fact that he was possessed of a great sense of responsibility for his patients accounts in part for the fact that he employed only one assistant in his large volume of surgical work, and never in any sense developed the group or clinic idea. He thus, naturally, held in a marked degree the confidence and admiration of his patients.

He was his own internist, pathologist, chemist, radiologist, physicist, and radiographer. This enormous amount of work increasing in volume from year to year could only have been carried on, practically alone, by a man of unusual physique endowed with great intellectual power, and these he devoted more and more as the years went by to the application of an increasing knowledge of medical science to the needs of his patients, and this went on day by day, year in and year out.

In the meantime he kept abreast of medical progress by continuous study, emphasizing Dr. Osler's epigram that the master word in medicine is work. When unusual cases presented themselves and were discussed among hospital men, he was always prepared with the ancient and recent knowledge of the subject and, being accused of looking up the information the night before, he said, "Do they think I just know; they do not know how hard I work to acquire all I know." Men of his calibre are not jealous of others, but they no doubt challenge supremacy and usually have it. It was fine to see how his contemporaries acknowledged it. Such men engaged in private competitive practice are always under close scrutiny, but if his colleagues found any flaws in him, they overlooked them. He was intrinsically one of them and a good fellow. Such is foundationally the character of medical practitioners.

Perhaps all men of his size feel the sporting instinct of leaders. A very innocent evidence of it in him was disclosed in his equestrian excursions. These early morning rides started out as very proper and dignified performances, and, although he could ride hard, the commander's order was that there should be no racing. However, let the other's horses nose ahead a little —as will happen in western horses—the race was on,

and the sedate and dignified canter became a furious gallop.

In his play—all the way from checkers, cards, or what not—he put all he had into it as he did in his work. His busy life left little time for social affairs even if he was a very socially-minded man. However all during his working life—and that was until the last month— he made numerous vacation trips to his beloved Switzerland, taking his entire family with him. While these were vacations, he nevertheless kept in touch with what was going on in medicine, made easy by his many friends in university and hospital circles.

The years that he did not go abroad, he spent two or three months each on his large farm situated on the shores of Grindstone Lake in Pine County. This large tract of land he converted from a mostly burnt-over, wild country into a productive and picturesque spot with bridle paths through the woods where he loved to ride with his guests and discuss agricultural projects on which, by the way, he kept as well informed as he was in medicine, he and his brother, Gustav, being frequent visitors to the Agricultural College.

During their summer vacations on the farm, Dr. and Mrs. Schwyzer were rarely without guests, the entertainment of whom gave them continuous pleasure. In a separate study built over the edge of the lake, Dr. Schwyzer nevertheless caught up with medical literature not only in medical journals, which in his hard-working months he had not had time to read, but the reading of some advanced work on physics or chemistry was also saved for this period. He had an amazing memory for the complicated formulae of organic chemistry.

His essay on "Musings on Excerpts on the Origin of Life" was published in phamphlet form that his friends, of whom he had many, might receive copies as a greeting and a sign he should have liked to have their discussion while pondering over these problems. These "Musings" were a summarizing analysis of what the natural sciences have to offer for a conception of an origin of the organized world from the inorganic. This study had its origin in a sheer love of an almost oriental abstract contemplation. Only a mind informed in chemistry, physics, embryology, geology, et cetera, could be more capable of the "Musings" found in this pamphlet, and so this active mind was unceasingly at work even in holiday times, and, if his guests were at all like-minded, he kept them busy listening to a recital of all he had been reading during his holiday.

He enjoyed the company of his fellows and while on his broad acres at the lake in Pine County, he was the squire of the district, acquainted with the farmers of his neighborhood and all their problems and difficulties. His many loans were not investments that brought him many returns.

He found time, during his many years of an unusually large and exacting practice, to write 108 articles. These covered a large part of the field of general surgery and most of the surgical specialties were largely subjects related to his surgical practice, and of a reflective, analytical and investigative nature. Notable were, early in his career, his report of an operation and cure of subclavian aneurysm, resection of the femur in continuity for sarcoma with transplantation of the fibula; both of these patients were presented at medical society meetings many years afterwards.

He originated a plastic operation on the pelvis of the kidney for hydronephrosis due to obstruction of the pelvo-ureteral junction which has become a standardized procedure.

He was an optimist in both medical and surgical therapeutics. An article entitled "Defeatism in the Treatment of Malignancy" reflected this characteristic. In the years when surgery was making great advances, he was in the front lines of the advance. His inaugural Thesis for this Academy in 1894 was on the "Infectious Nature of Carcinoma. Inoculation of Cancer in the Wound Made for Total Extirpation of the Cancerous Womb." His last paper before this group was on "White Bile." In the interim he had read fifty-three papers and numerous case reports. His numerous discussions of papers read were not confined to surgical subjects.

His was the value of a highly intellectual and practical surgeon, experienced from years of keen, thoughtful observation, endowed with the faculty of evaluation, being self-reliant and possessed of high ideals and integrity and singleness of purpose. All these are required in the suddenly changing scenes of action in the successful surgeon. It goes without saying that the character of his work, and the manner of life he led, exerted a profound influence on his community.

That he was imbued with a desire to teach is evidenced by the fact that he was Professor of Pathology at Hamline University from 1900-1902 and, during this period, pathologist to the City and County Hospital. From 1904-1908, he was professor of Clinical Surgery at Hamline University. In 1927, he was appointed Professorial Lecturer at the University of Minnesota, and in 1932 was made Professorial Lecturer Emeritus. Too late in life he was offered the Chair of Surgery at the University of Minnesota. Having by this time become involved in a very large surgical practice, he decided that at this time of life he could not carry the double load, and he was so constituted that he would not undertake anything that he could not give all the time and effort required to make it a success. It was a great pity that the opportunity did not come to him earlier that he might have developed and organized his efforts as a great teacher and thus have widened his influence in his community. However, in his well-organized one-man unit, both by example and precept, his influence was felt in his hospital work by succeeding groups of interns and by many visiting physicians.

He was a wonderful mathematician. He was born in 1864, and said in 1934 that the difference between 1864 and 1934 was fifty-five not seventy. The period from 1934 to 1944 would be ten years and he should be eighty, but I am sure you will all admit that as far as mental activity was concerned he was one of the youngest members of the Academy.

The last year of his life ran true to form. He had been having abdominal distress for a year but, not

wanting to cause any uneasiness in others, did not mention his illness to either family or friends until a few days before an exploratory laparotomy was done. He performed a major abdominal operation the day before his own, had one scheduled the same day as his own, and then suddenly decided to surrender. After that, he was the same self-reliant man, knowing his fate, discussed it at times briefly, predicted the date, said it was hard waiting, but he could take it. The impatient man became patient and hoped he would not be impatient, and left believing that the universe could not go wrong. These last days were an inspiration and long to be remembered.

The scientific program followed.

CARCINOMA OF THE TOE AND METASTASIS
Report of a Case

A. E. BENJAMIN, M.D.
Minneapolis

F. J., a man aged forty-nine, first consulted me March 1, 1940, on account of pain in the upper left abdomen. The trouble began in 1938. He improved for a time under treatment but of late had been suffering considerably. He also complained of some impaired vision.

His father had died at seventy-two, his mother at twenty-eight from infection at child birth. One brother was living and well. One sister died at fifty. He had had no children. He gave a history of having an operation for hernia in 1924 and a tonsillectomy in 1939.

He was five feet eleven inches tall, weighed 170 pounds, his blood pressure was 120/80. His abdomen was distended, especially in the upper left quadrant. The urine contained a trace of albumen.

An x-ray showed moderate gastritis and a diverticulum of the third portion of the duodenum.

With dietetic management, he gradually improved so that in about a month's time he was comparatively well and complained of no pain in his abdomen.

I did not hear from him again until October 27, 1943. He then stated that he had had a great deal of pain in his head for two months. He was exceedingly nervous and could not sleep. He consulted various doctors, including a chiropractor and took several electrical treatments. The diagnosis made by a number of doctors was sinusitis. He stated that he had taken a great deal of medicine to stop the pain and to make him sleep. The pain was greatest at this time through and near the left eye and nose.

An x-ray taken in August, 1943, showed a bilateral sclerosing mastoiditis of long standing and a right frontal and ethmoidal chronic sinusitis. His pulse remained between 80 and 85. His frontal sinuses were tender to percussion. There was some soreness on pressure over the stomach and colon and these were somewhat distended.

He had an ingrowing toe nail on his left big toe. It had never healed after an operation done elsewhere, about three weeks previously. There was some enlargement of the inguinal glands.

He was sent to the Northwestern Hospital for observation and treatment October 27, 1943. On October 30, the unhealed area on the big toe was excised. The pathologist reported a squamous cell carcinoma.

An x-ray of the stomach on November 1, 1943, demonstrated a delay in emptying after four hours. The x-ray of the lungs showed a probable malignant infiltration of the right lung.

On November 4, Dr. Ulrich, in consultation, reported he was of the opinion that there was a metastatic carcinoma of the lung and also of the brain.

On November 6, Dr. Gammel examined the patient. He was of the opinion, on account of the pain in the eye, that the headaches were of a migraine nature.

Dr. Phelps, on November 6, made a bronchoscopic examination and reported no evidence of obstruction of the bronchi and was unable to observe any area that might be carcinomatous.

The blood picture and spinal fluid examination on November 4 were normal.

The patient went home on November 21 but returned to the hospital December 20 because of nervousness, sleeplessness and weakness.

Dr. Gammel re-examined the patient on November 21 and found the eyes in all respects virtually normal.

Dr. Michael saw him in consultation, and on December 22 an encephalogram was decided upon. Ten c.c. of the spinal fluid was slowly removed and replaced with 10 c.c. of air and the procedure repeated until 110 c.c. of fluid had been removed and 100 c.c. of air injected. An x-ray of the brain was then taken. No brain lesion or abnormality was found.

After the encephalogram was taken, the patient's temperature went up to 101 the next day and gradually declined to normal so that on the last of December, he had no fever and his pulse rate was normal.

His toe continued to bother him. His headaches began to return and his right knee started to pain a great deal so that morphine had to be given occasionally for relief. Heat and aspirin gave him some comfort during the day but on account of pain and sleeplessness sedatives had to be given at night. The toe showed no signs of healing, and the glands in the groin began to enlarge. The glands were removed for biopsy and relief. They were found to be malignant. A few days later the toe was amputated.

An x-ray was taken of the right knee but showed no lesions. Another x-ray was taken of the lung and this showed more definite signs of malignancy.

The patient remained in the hospital until February 7, 1944, when he returned home. He slowly declined and died suddenly on April 24, 1944, at 6:45 A.M.

A postmortem was held but unfortunately the skull was not opened. The report was as follows:

The heart weighed 400 grams and the myocardium showed scattered fibrosis. The coronaries were slightly sclerotic but showed no narrowing. The right lung weighed 1150 and left lung 1250 grams. They were markedly emphysematous and edematous. The right upper lobe contained a firm whitish area about 8 cm. in diameter arising from the right upper lobe bronchus and not quite reaching the periphery. Some pus could be expressed from this area. The spleen weighed 150 grams and was somewhat fibrotic. The liver weighed 2000. There was a diffuse whitish infiltration scattered about and also many discrete nodules, white and firm, ranging from one to 6-7 cm. in size. The right adrenal gland showed one large white hard nodule about 2 cm. in diameter and several smaller ones. The left adrenal showed some very small nodules. The right kidney weighed 225 gms. and the left 250. They showed no gross pathology. The other organs were normal.

The tumor in all the organs consisted of nests of squamous epithelial cells. There was no definite keratinization, which speaks for its origin from the bronchus instead of the skin. Its location in the lung is also in favor of this origin. There were many areas of necrosis in the tumor in all its locations. In the lung, there was some polymorphonuclear reaction in the areas of necrosis, significant of some superimposed

infection. Around the tumor, the nontumor-containing lung was full of very large macrophages with phagocytosed blood pigment and fat globules. The liver and adrenals showed similar tumor nodules. None was found in kidneys, spleen or pancreas. The kidneys showed some tubular atrophy.

Diagnosis:—Squamous cell carcinoma of bronchus with metastases to skin, adrenals and liver.

I have asked Dr. Cy Hanson to describe the x-rays and Dr. Michael to give the neurological interpretations of the symptoms. Dr. Phelps will explain his bronchoscopic findings.

I do not think we can say where the primary growth was. The postmortem findings would indicate it was in the bronchus but the first known tissue affected was the left big toe.

Discussion

Dr. Kenneth Phelps, Minneapolis: This man presented the x-ray finding of a shadow in the right upper lobe of his lung without any clinical evidence of chest disease. Usually a primary carcinoma of the brunchus produces some symptoms. For example, cough is present in about 100 per cent of them. This man had no cough, no pain, and no blood-streaked sputum. The only reason for bronchoscopy was the x-ray finding of a mass. I could find no visible evidence of tumor. When I heard later that carcinoma had subsequently been found in the toe and glands of the groin, I thought this was metastatic and not primary carcinoma of the lung.

Dr. J. M. Michael (by invitation), Minneapolis: I saw this man first on December 10. At that time the most prominent complaint was headache day and night, persistent since last August. He also had the complaints of a melancholic, he was greatly worried, he was blue, his wife worked and then went out to the pool halls, not coming home before 2 a.m., which worried him a great deal. After I got through with my examination, and was unable to get any sign of nervous system involvement, he said: "Now my headache is gone." We naturally felt a little bit dubious at the moment about the presence of an organic brain lesion in spite of the head complaint. Several weeks later he reported his headaches came back again and at that time I was able to make out a few objective signs. The abdominal reflexes were gone and Gordon great toe extension was positive. We did a spinal air injection at Northwestern Hospital. The plates you saw were negative. After this procedure he became delirious, which I thought might represent a bromide psychosis. We had a blood bromide determination done, which was found to be 196 mgm. per cent. We put him on heavy salt administration and the delirium left him promptly. We had hoped after his death to get confirming evidence at postmortem, but unfortunately necropsy did not include the head.

Dr. S. E. Sweitzer, Minneapolis: This looks to me like a comedy of errors. If the man had carcinoma on the toe first, then he had metastases in the lung and brain. If he had a primary in the lung he would have passed away sooner.

Dr. J. S. Abbott (by invitation), St. Paul: In September, 1941, I was called in to see an elderly woman of 74 who had an ulcer on her great toe which she had had for four or five months. She had a definite cardiac disturbance with a murmur and hypertension, and the ulcer had been treated for some time with no evidence of healing. The toe was amputated at the phalangeal metatarsal joint and was reported to be squamous cell carcinoma. Some six months later she developed hemiplegia. She lived for about one and a half years after the hemiplegia. About six months prior to her death the glands in her groin enlarged, increasing to a mass about the size of a grapefruit. There was no evidence of further metastases. She died a cardiac death along with gradually failing from hemiplegia.

The question of removing glands in the groin for carcinoma of the toe has often been given considerable consideration. When we have carcinoma of the toe or hand there are so many lymph drainage channels, as in the popliteal and epitrochlear regions, reaching the groin or axilla, that one wonders whether it is advisable to go ahead and take out the glands proximal to them. I think, for these cases of carcinoma of the toe, it is a question whether it is advisable to remove the glands in the groin. I have had two other malignancies of the extremities recently. One was a melanoma on the back of the hand in a woman 80 years old. I excised it and did a skin graft. In very old people these do not recur so quickly and she hasn't yet had any recurrence. The other was a man of 72 with epithelioma on the back of the hand. This was also removed locally.

Dr. A. E. Benjamin, in closing: In this case they were enlarged and out of curiosity and to relieve him of the pressure, I removed the glands and found a squamous cell carcinoma also.

The first symptom he complained of was in the toe, then in the groin, then the head. But the lung was never troublesome. He never coughed up any blood. We could find no rales in the lung. Dr. Ulrich looked him over pretty thoroughly. It was only because of the x-ray findings in the lung that we had the bronchoscopic examination.

I was not present at the postmortem. I thought they would surely open the skull because of the symptoms but, for some reason, they did not open the skull.

REGIONAL ILEITIS

Report of a Case

E. A. REGNIER, M.D.,
Minneapolis

This case is reported because it typifies the usual course of the disease from its early acute phase to the chronic.

Regional ileitis as described by Crohn in 1932 is a chronic inflammatory process commonly involving the terminal portion of the ileum although other parts of the small bowel may be involved. The etiology is unknown but many investigators think a virus may be the causative agent. The disease is destructive, progressive and proliferative and results in marked thickening and fibrosis of the intestinal wall, often resulting in obstruction. The symptoms early are: malaise, low grade fever, peritoneal irritation, often resembling appendicitis. In about 50 per cent of reported cases, appendectomies have been done. This phase courses into one of colic, diarrhea suggestive of ulcerative enteritis but never accompanied by melena. As chronicity progresses, obstructive symtoms predominate and finally abscesses and fistulae appear. Lahey reports 25 per cent of their cases showed fistulae or abscesses. The diagnosis can usually be confirmed by x-ray. A barium enema will often show a cord-like filling of the terminal ileum,

the lumen of which appears almost closed. This was described as the string sign by Crohn.

A married woman, aged twenty-five, had a negative past history except for appendectomy. Eighteen months previously she was treated for salpingitis (probably early acute ileitis). Eight months previously she was hospitalized on two occasions for fever, abdominal pain and diarrhea. (Second stage of the disease.)

At operation Dr. La Vake noted marked induration of the terminal ileum, cecum and colon. This was not disturbed. Pain, colic and fever, and nausea persisted. X-ray of the colon revealed no abnormality of the right colon. It was impossible to fill the terminal ileum by this method and, because of the obstructive symptoms, no barium was given by mouth. The above symptoms continued until early in April. The patient was observed, given several blood transfusions, and on April 10 an exploratory operation was done because of the presence of a large mass in the right lower abdomen. The patient had noticed this mass two months previously and stated that it had been gradually growing. On opening the abdominal wall, an abscess was encountered beneath the right rectus muscle which contained one-half ounce of thick, creamy pus. There was a very small fistulous opening leading to the base of the cecum. Upon exploring the abdomen, the mass which had been felt appeared to be a mass in the cecum proper. The terminal ileum was dilated for a distance of seven feet. The ileum was dull gray. The colon wall was edematous and markedly thickened. There was an area about 8 cm. long in the region of ileocecal valve which was very hard and the cecum was adherent to the parietal peritoneum. There were large nodes in the mesenteries of the ileum and ascending colon. Because of the obstructive lesion and because of the large nodes, I felt that we were probably dealing with a granulomatous lesion of the cecum and felt that a radical removal, together with the nodes of the me enteries, would be most apt to give permanent relief. Fifteen inches of the terminal ileum and the entire right half of the colon were resected and an end-to-end anastomosis was done between the terminal ileum and the mid transverse colon. The diameter of the terminal ileum was greater than that of the transverse colon.

Convalescence was most uneventful. She left the hospital on the fifteenth postoperative day.

Pathological Report: The terminal eight to ten inches of the ileum was involved in an inflammatory mass. There was marked thickening of the wall of the bowel, a great deal of fibrosis, superficial ulceration of the mucosa and the lumen was one-half a centimeter in diameter. Pathological diagnosis: Terminal ileitis. (Colored slides of the pathological specimens were shown.)

There are many points of view recorded on the treatment of regional ileitis. We feel that in the acute and subacute stages medical treatment is probably best. In the event that this lesion is accidentally noted at operation in its acute or subacute stage, it is probably best to leave it alone or to do a short circuiting operation, transplanting the terminal ileum into the mid-transverse colon. On an attempted resection in the chronic stage where a good deal of cicatrix has formed in the bowel and where there is evidence of obstruction or fistulae formation, it is best to do a radical operation removing the affected nodes and mesenteries of both ileum and ascending colon.

Discussion

Dr. R. T. La Vake, Minneapolis: This case and another, quite similar, have been very interesting to me. Both, after a long period of illness associated with diarrhea and abdominal pain, were diagnosed as having a pelvic condition. The patient reported here had been hospitalized for months with a diagnosis of bilateral salpingitis, and the other came to my attention with the diagnosis of rapidly-growing malignancy of the right ovary. At operation, in one, the tubes were found to be normal and in the other the right ovary was found to be normal. To me, the valuable sign of the true nature of the right adnexal mass was the gurgling elicited in a bimanual examination, very similar to the gurgling elicited in a cecum mobile.

Both patients developed signs of obstruction necessitating operation and resection of the lower ileum. The operations were long and very difficult in the presence of much inflammation. Yet the operative reaction in each case was relatively mild. However, one may disagree with the medical treatment and watchful waiting in these two cases; at least it is possible that time and conservative treatment had built up a resistance that allowed the patient to sustain an obvious spill of pus with comparative impunity. Such spill was unavoidable with the best operative technique.

ANGIOID STREAKS IN THE RETINA
Report of a Case

ERLING W. HANSEN, M.D.
Minneapolis

This woman was a teacher, thirty-four years old, referred by Dr. Rusten who sent the following note: "I first saw her on April 5, 1944, and my diagnosis was a pseudoxanthoma elasticum. The patient stated that the first eruption appeared at the site of the neck at the age of seventeen. This was symmetrical and yellow in color. Since that time lesions have developed over the chest and axillary folds. Over this same period of time she has had generalized pruritus, and during the past four months has had an urticarial eruption. An examination of the skin revealed an eruption at the sides of the neck, over the chest, axilla and arms. This consisted of very lax skin with yellow discolorations and being made up of pin-head to match-head sized papules, linear arrangement and also some of them causing striations. There was no history of any other member of the family having a skin eruption similar to this."

(Slides of fundus photographs of both eyes were shown.)

The retina in the right eye shows a generally mottled appearance. Around the optic disc is a somewhat irregular incomplete dark ring with brownish red lines radiating from it. For the most part they follow the general direction of the vessels of the retina but can be seen to lie at a deeper level. In some places they form more of a criss-cross network. There are three small hemorrhages in the retina and in two places small areas of exudate.

The left eye shows a much more marked network of brown lines, especially heavy on the temporal side of the disc, extending upward and downward parallel to the superior and inferior vessels. The macula appears more prominent than usual with somewhat of the appearance of cherry red spot. The pigment disturbance throughout the fundus is quite marked. There are also several hemorrhages and exudative spots in this eye.

There has as yet been no visual disturbance in this case. In some, as time goes on, there is deterioration of vision, especially marked, of course, when the macular area becomes involved.

Angioid streaks may not be too rare a condition, but

certainly it is not very common. The question of etiology of these streaks has been rather a moot question until 1929 when Grönblad pointed out association with pseudoxanthoma elasticum. In 1939 Hagadoorn found histologically, thickening of Bruch's membrane, with ruptures; thickening of arterial walls of the choroid and a disappearance of elastic tissue. Degeneration of elastic tissue elements of Bruch's membrane had been suggested in 1917 by Kofler. The largest number are in the middle-age group and probably 40 per cent of patients are over forty. It does occur in senile elastosis and has been reported also in Paget's disease. The greatest number we now know are associated with pseudoxanthoma elasticum. The streaks are caused by the breaks in Bruch's membrane.

Discussion

Dr. F. E. Burch, St. Paul: I think these cases are of interest to the dermatologists as well as to the ophthalmologists. In 1929, in Copenhagen, when Dr. Grönblad was doing her great work on association of angioid streaks and pseudoxanthoma elasticum, I was asked if I had seen these streaks often in cases of xanthoma elasticum. I did not know what she was talking about as I had never recognized a case of the latter.

The chief interest in this whole subject is the *relationship* between the skin condition and the retinal findings. Fifty per cent at least of these cases develop marked impairment of vision from central degeneration.

In regard to the etiology, these pseudo-circulatory streaks are undoubtedly blood pigment and I think the photograph I will show illustrates this deeper pigmentation. The patient was thirty-six years of age. The picture shows they have nothing to do with the retinal circulation and are not a part of the choroidal circulation. How they occur and why they occur has been a cause of a lot of theorizing and controversy—whether or not there is elastic tissue in the membrane of Bruch—but it seems to be a proper hypothesis. These patients suffer a large degree of impairment of vision. I will project a fundus picture showing the degeneration in the macula of this patient which is quite extreme.

From the Audience: If you do not see the skin in the individual, how would you know that it was not a pre-senile condition?

Dr. Burch: By its association with pseudoxanthoma elasticum.

Dr. S. E. Sweitzer, Minneapolis: I have had only one case of pseudoxanthoma elasticum, and in that one the eye findings were negative. I think in a fair percentage of cases reported they do have streaks. It is usually discovered in young people. My case was a teen-age youth.

The meeting adjourned.

Erling Hansen, M.D.
Secretary

Meeting of October 11, 1944

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club, on Wednesday evening, October 11, 1944. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the vice president, Dr. A. G. Schulze.

There were fifty members present.

The secretary being absent, Dr. Shulze also read the minutes of the May meeting and they were approved as read.

The scientific program followed.

ULCERATIVE HODGKIN'S DISEASE
The Value of Node Imprints in Diagnosis

S. E. SWEITZER, M.D.
Minneapolis

Dr. Sweitzer gave a lantern slide talk on the above subject. This paper will be published later in the *Archives of Dermatology and Syphilology.*

Discussion

Dr. H. E. Michelson, Minneapolis: Dr. Sweitzer has related to you the history and findings of a very interesting case that can be discussed under three headings:

1. Clinical: There was nothing in the morphology that suggested the final diagnosis.

2. Histologic examination by the old methods made it impossible to definitely identify the preparation as one of Hodgkin's disease. As you know, we have become so accustomed to looking at fixed and stained tissue that we have no clear-cut conception of just what a cell looks like.

3. The third method of examination was that introduced to dermatology by Drs. Sweitzer and Winer. Here there is an effort made to get the free cells from pressing the cut gland against a slide and examining the preparation fresh and stained. This method offers much promise, and we hope that eventually we will be able to identify the various lymphoblastomas.

STUDIES ON EXPERIMENTAL CANCER

MAURICE B. VISSCHER, M.D.
Minneapolis

Dr. Visscher, of the Department of Physiology, University of Minnesota, gave a paper on the above subject and illustrated it with numerous lantern slides and charts.

Abstract

My purpose in this presentation is twofold. First I want to outline the basis on which cancer research is being carried out in the University of Minnesota and second I wish to tell you about some of the results of that work.

The main lines of cancer research at Minnesota are under the direction of Dr. J. J. Bittner, who is the George Chase Christian Professor of Cancer Biology. With him are associated Dr. C. P. Oliver, Director of the Dight Foundation for Genetics, Dr. R. G. Green, Professor of Bacteriology, Miss Zelda B. Ball, Cancer

Biologist, Dr. C. P. Barnum, Instructor in Physiological Chemistry, Dr. J. T. King, Associate Professor of Physiology, and your speaker, among others. This work at Minnesota is the direct result of interest by Mrs. Christian, the Citizens Aid Society of Minneapolis, Dr. Ivar Sivertsen, Mr. N. C. Beim, Mr. J. F. Bell and other public-spirited citizens, besides a large group of medical scientists in the University and in the State at large.

The work is supported partly by private gifts and partly by a special State Legislative Appropriation. The two together result in more than twenty-five thousand dollars a year being available specifically for cancer research. This sum is expended in accordance with the terms of the special gifts and under the administration of a special committee in charge of the larger sums.

Dr. Bittner has under study thirteen specially inbred strains of mice of characteristics valuable to cancer research. In all more than twenty-five thousand animals per year are studied in connection with cancer studies at Minnesota. Some of the mouse strains have been inbred under Dr. Bittner's supervision for more than fifteen years, representing fifty or more generations.

The essential element of the cancer research plan at Minnesota is one of what may be called inter-science co-operation. A fundamental cancer biologist is actively co-operating with a virologist, an endocrinologist, a chemist, a pathologist, a histologist, a tissue culture expert, a human genetics expert, a nutrionist and with clinicians, in the attack on this problem. He has the help of experts whose combined salaries would amount to twice the cost of the cancer program proper. Thus because these experts can each give part time to this work the University can accomplish a much more significant program than would be possible if the work were done in an isolated self-contained unit. It must be obvious that this is an especially economical way of accomplishing research requiring collaboration of experts in various fields. What is now essential is assurance of longer-term support for the whole project.

What has come out of this work, and what is now under way? The main studies have been and are now in the field of mammary cancer. This trend results from the fact that Dr. Bittner discovered, ten years ago, the importance of an agent transmitted from mother to young in nursing, this agent being one of the absolute essentials to high breast cancer incidence in mice.

Minnesota studies with the ultracentrifuge were the first to show that this agent is sedimented as one would expect viruses to be. The agent has been found to be filterable, sensitive to heat at 60°C. for one hour, is destroyed by weak acid, is not destroyed by extraction with fat solvents. It has, in fact, every property consistent with the view that it is a virus.

Some current studies are aimed at further chemical purification and identification of the agent. Others are aimed at attempts to potentiate and attenuate the agent, and to develop immunity to it.

One important current problem is a comprehensive survey of human breast cancer in an attempt to find evidence for or against genetic, endocrine and virus factors in its causation. This study was under way for a year before the nation-wide council on this problem was called by Dr. C. C. Little in Bar Harbor, Maine. The Minnesota studies will become a part of the national program.

Another angle of the breast cancer problem which has received intensive study at Minnesota is the influence of diet. Here it was first shown that simple restriction of caloric intake, all other factors being held constant, greatly reduces mouse mammary cancer. These studies have had very interesting and important physiological by-products. They have shown that the endocrine and sexual apparatus are altered in very specific ways by calorie-restriction. To be specific the estrus cycle is stopped or slowed, fertility is reduced or abolished, uteri do not develop beyond the pre-pubertal stage, mammae do not develop to maturity. And most interesting of all perhaps, after calorie-restriction for two-thirds the normal life span, feeding a normal diet again restores fertility, at a time when a normally fed animal has become sterile from old age. Thus caloric restriction postponed senility in these animals.

I have described only a fraction of the work that has been done by the Minnesota cancer research group and I want to emphasize again that the work is largely that of others than myself. If I have been useful it has been mainly in arranging for co-operation and suggesting some physiological approaches to the problem. Cancer is responsible for about 20 per cent of autopsied deaths over one year of age in Minnesota, according to Berman. It is surely worth our while to obtain every bit of information about it that we can. Cancer is a disease of living, growing cells and it is obvious that every branch of biological knowledge must be brought to bear on its study if we hope for success. That is what we are trying to do at the University of Minnesota and we hope that we will have your intellectual, moral and physical support in carrying it out.

Discussion

DR. C. B. DRAKE, Saint Paul: Do mice develop cancer of the ovary, or is it anywhere?

DR. VISSCHER: I talked entirely about the mammary cancer tonight.

DR. DRAKE: Was the restriction of diet the factor that caused them not to become pregnant?

DR. VISSCHER: We think that the dietary restriction inhibits the anterior lobe of the pituitary and that the inhibition of the anterior lobe of the pituitary prevents normal ovarian function. The ovarian hypofuncton prevents breast development. One of our reasons for believing this is that if you administer pituitary hormone, antuitrin-S, these animals show a normal estrus cycle and there is some mammary development.

DR. H. B. ZIMMERMANN, Saint Paul: If you break that chain by castration, does it affect cancer incidence?

DR. VISSCHER: Castration in the A strain of mice does not influence cancer incidence in virgins because the virgins are low cancer anyhow. In the C 3 H strain a very interesting thing happens—instead of having a zero cancer incidence one has a very high cancer incidence in castrated animals, but it is delayed. It is at 16 to 18 months instead of 10 to 14 months and it only occurs after adrenal cortical tumors develop. Not

(Turn to Page 1038)



simple depression

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3. Depression following pregnancy and childbirth.

4. Depression accompanying the onset and course of the menopause in women and the involution period in men.

5. Depression associated with menstrual dysfunction.

6. Reactive depression precipitated by an external problem situation which the patient can neither resolve, tolerate, nor ignore.

*Guttmann, E. and Sargant, W.—B. M. J., 1:1013, 1937

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only do they develop cancer, but they go into continuous estrus and there is abnormal breast development. By removal of the ovaries, one upsets the endocrine balance so that the adrenals take over a function they did not have before.

Dr. H. L. Ulrich, Minneapolis: What is the milk agent? A virus?

Dr. Visscher: The milk agent has to be present before the mouse has produced a litter. The interpretation that has been given is that the virus has to be present while there is rapid proliferation under hormonal influence in order to set the stage for mammary cancer. The virus is in the mouse from the day of birth to the time of cancer development.

Dr. Zimmermann: If you have a little brother and sister both of whom have received the milk factor from the mother and then you take a mouse that has been taken away from the mother and foster fed, is this milk factor in the blood serum of the mother, and can it be transferred by transfusion?

Dr. Visscher: Yes, that has been done; the agent is present in the blood.

Dr. R. T. La Vake, Minneapolis: Experimental work on animals seems to point to the following conclusions: that cancer is influenced by heredity, that nursing from a cancer strain mother increases the chance of cancer in the offspring, and that estrin, at least, stimulates cancer growth. These findings translated into practice suggest the advisability of especial watchfulness when cancer is in the history: not permitting such mothers to nurse their babies; and not giving such women estrin for menopausal symptoms. May I add that the annoying symptoms of menopause can be adequately handled without the use of estrin. It is possible that the lowering of estrin production is a beneficent action on the part of nature at this age. The amounts of estrin being given for menopausal symptoms is tremendous. I would like to ask Dr. Visscher if he believes that harm may be done by such treatment.

Dr. Visscher: Yes there is a chance that estrogen administration may cause mammary cancer in the human. There is no question but what there is still some danger. We have not had enough experience to know, but what we may do a great deal of harm by estrogen administration. It will take another ten years to find out and we hope the result will not be too serious.

The meeting adjourned.

Erling W. Hansen, M.D.
Secretary.

The American Red Cross trained last year over 80,000 volunteers for hospital service as nurse's aides, dietitians's aides, or Gray Ladies . . . issued 600,000 certificates in first aid . . . 300,000 in home nursing . . . 400,000 in swimming and water safety . . . and, in addition, recruited 15,000 nurses for service in the Army and Navy.

In Memoriam

WILLIAM WRIGHT CHRISTIAN

Dr. W. W. Christian of Saint Paul died November 4, 1944, following an illness of nearly two years.

Dr. Christian was born near Plymouth, New York, in 1869. He studied at Colgate Academy and New York Medical College and interned at Flowers Hospital in New York City.

After practicing for a time in Berlin, Connecticut, he came to Saint Paul in 1911 and for a time was assistant city physician. He maintained the same office in the Lowry Building for thirty-three years.

Dr. Christian is survived by his wife and a son, Stuart B. Christian, of Saint Paul.

* * *

HERBERT R. GORE

Dr. Herbert R. Gore, formerly of Rochester, Minnesota, was killed in a plane crash near Florida Island in the Pacific, July 26, 1944.

Dr. Gore was born in New York City, May 7, 1908. He received his early education at Thompsonville, Connecticut, and at Enfield High School. He received a B.A. degree from Columbia in 1929 and his M.D. degree from the Long Island College of Medicine in New York City in 1933. After serving a two and one-half years' internship at King's County Hospital, New York, he took postgraduate work at the Polyclinic Postgraduate Hospital and Medical College.

After practicing in Brooklyn for three years, he became associated with Dr. F. H. Powers in practice at Rochester, Minnesota.

He was formerly a member of the Olmsted-Houston-Fillmore-Dodge County Medical Society, the Minnesota State and American Medical Associations.

* * *

PATRICK JOSEPH GRIFFIN

Dr. P. J. Griffin of Fertile, Minnesota, died October 15, 1944, in the Veteran's Hospital, Fargo, North Dakota, after a short illness.

Dr. Griffin was born May 30, 1880, at Shakopee, Minnesota, where he attended school before taking his premedical training at the University of Minnesota. He received his M.D. degree from Northwestern Medical School, Chicago, in 1913 and interned at St. Luke's

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Hospital, St. Louis. He was with the Health Department in Chicago from 1913 to 1915. He went overseas during World War I as a medical officer. From 1930 to 1933 he served on the staff of Hines Hospital for Veterans in Chicago and also served as state bacteriologist in the Chicago Health Department. Since last spring he had been a medical officer on the Veteran's Administration staff at Alexandria, Louisiana.

Dr. Griffin was a major in the medical reserve. He was also a member of the Knights of Columbus, the Red River Valley Medical Society, the Minnesota State and American Medical Associations.

Dr. Griffin is survived by his widow; three daughters, Genevieve of New York, Geraldine, overseas with the Red Cross and Dr. Gloria Taylor of San Diego; a sister, Mrs. Angela Radke and a brother, John Griffin, both of Saint Paul.

* * *

JOHN PHILIP HAWKINSON

Dr. J. P. Hawkinson, of Crosby, Minnesota, died on October 19, 1944, at the age of forty-eight.

Dr. Hawkinson was born in Virginia, Minnesota, August 19, 1896. He attended high school in Virginia and graduated from the University of Minnesota Medical School with the degrees of B.S. and B.M. in 1926. After interning at the Minneapolis General Hospital, he practiced in Kensington, Minnesota, for eighteen months before moving to Crosby.

Dr. Hawkinson was at one time mayor of Crosby and president of the Upper Mississippi Medical Society. He was also a member of the Minnesota State and American Medical Associations.

* * *

WILLIAM J. McCARTHY

Dr. W. J. McCarthy, for forty-six years a practitioner at Madelia, Minnesota, died October 25, 1944, after several weeks of failing health.

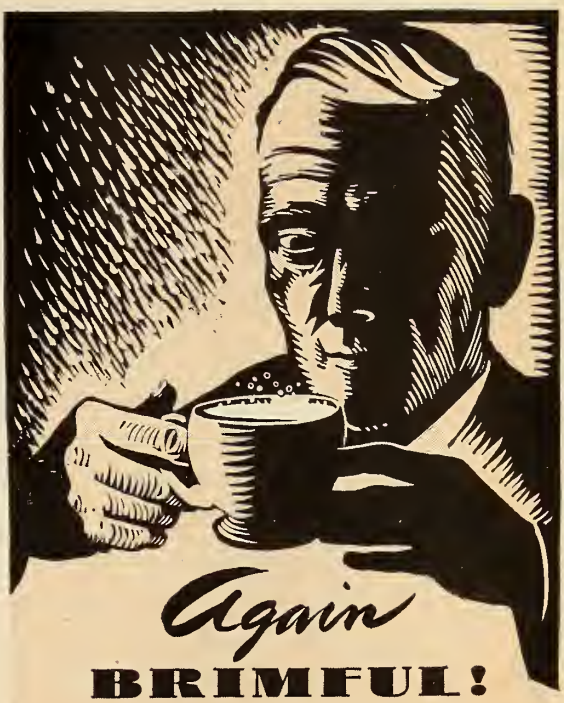
Dr. McCarthy was born in Watonwan County, Minnesota, March 2, 1868. He received a B.A. degree from Carleton College in 1894 and his M.D. degree from Northwestern Medical School in 1897. He located in Madelia the same year.

In 1899 he married Lella Clark of Madelia. Two sons were born to them, J. Donald McCarthy, who was recently honorably discharged from the Marines, and Richard McCarthy, now an army engineer.

Dr. McCarthy was president of the Board of Education at Madelia for many years and also served as mayor of Madelia and chairman of the Board of Health. In 1920 he was president of the Southern Minnesota Medical Association. He owned and operated the Madelia Hospital from 1918 until 1941 when it was purchased by the village. He was a member of the Watonwan County Medical Society, the Minnesota State and American Medical Associations.

Through Dr. McCarthy's death Madelia loses one of its outstanding citizens who devoted many years to the well being of the community.

(Turn to Page 1040)



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WAYNE H. MAY

Dr. Wayne H. May of Minneapolis died at a Hibbing hospital in November, 1944, three days following a heart attack sustained while hunting.

Dr. May was born at Cologne, Minnesota, February 19, 1877. His early education was obtained in the district school and at Teachers College in Moorhead, Minnesota. He obtained his medical degree at the University of Minnesota in 1907 and interned at Metropolitan Hospital in New York City.

He was a member of the staff of St. Barnabas Hospital in Minneapolis and a member of the Hennepin County Medical Society, the Minnesota State, and American Medical Associations. In 1930 and 1931 he was president of the Apollo Club and was still active in its affairs up to the time of his death. He was also a thirty-second degree Mason and a member of Phi Alpha Gamma.

Dr. May is survived by his wife and two sons, Captain Robert May, stationed in Texas, and Wayne, Jr., Pan-American meterologist, now stationed in Hawaii.

REPORTS and ANNOUNCEMENTS

MEDICAL BROADCAST FOR DECEMBER

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Association and the Unversity of Minnesota School of the Air.

Dec. 2— 9:15 a.m.	(WCCO)	Methods of Diagnosis in Disease*
Dec. 2—11:30 a.m.	(WLB-KROC)	Medicine in the News
Dec. 6—11:00 a.m.	(WLB)	Climate and Disease
Dec. 9— 9:15 a.m.	(WCCO)	Contagious Disease Control*
Dec. 9—11:30 a.m.	(WLB-KROC)	Medicine in the News
Dec. 13—11:00 a.m.	(WLB)	Metabolism of Food
Dec. 16— 9:15 a.m.	(WCCO)	Sulfa Drug Treatment*
Dec. 16—11:30 a.m.	(WLB-KROC)	Medicine in the News
Dec. 20—11:00 a.m.	(WLB)	Carbohydrates
Dec. 23— 9:15 a.m.	(WCCO)	Penicillin*
Dec. 23—11:30 a.m.	(WLB-KROC)	Medicine in the News
Dec. 26— 4:15 p.m.	(WCCO)	Your Hospital in Wartime (Inventory Time)
Dec. 27—11:00 a.m.	(WLB)	Vitamins in the Diet
Dec. 30— 9:15 a.m.	(WCCO)	Dental Resolutions for the New Year
Dec. 30—11:30 a.m.	(WLB-KROC)	Medicine in the News

*Keyed with subject of the month—Minnesota State Medical Association Packet of Information for Members.

(Turn to Page 1042)

The macrocytic anemias in pregnancy respond to

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(6) 1-10 cc. vial (150 U.S.P. XII units)

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MINNESOTA PUBLIC HEALTH ASSOCIATION

Minnesota's upturn in the tuberculosis death rate, the care of the tuberculous veterans of World War II, the mobile x-ray unit, the new physical fitness program for schools, the new federal aid to states for the tuberculosis control work, and other pertinent problems in today's health program were discussed at the 38th annual meeting of the Minnesota Public Health Association held in the Twin Cities, October 27. The meeting was attended by Christmas Seal workers from all sections of the state.

Dr. F. W. Harrington, president of the Association, reported on the increased tuberculosis death rate as follows in his annual report:

"For the first time since 1936, we are not able to report that Minnesota's death rate from tuberculosis has again dropped to an all-time low, for the curve shows an upward trend for the first time in eight years. The 1943 tuberculosis death rate for Minnesota was 29.6, a rise of 3.3 over the previous year.

"Even though no nationwide increase in tuberculosis occurred in the United States during 1943, the rise in the number of deaths in several large industrial states is ominous. Every day the war continues, the threat of a wartime and postwar rise in tuberculosis becomes more serious."

It was stated at the meeting that around 500 service men and women are being discharged from war service each month because of tuberculosis. It was brought out that this involves a tuberculosis control problem since the majority of the veterans do not remain under hospitalization long enough, but return to their homes, where, not being under medical supervision, they may spread the disease to the community.

The fact that federal aid will be available to states for tuberculosis control work in 1945 as a result of a bill recently passed by Congress will make possible an intensification of the case-finding program in the state, was brought out at the meeting. This program calls for joint participation of state and local agencies.

The work of the first mobile x-ray unit in Minnesota, the Christmas Seal unit of St. Louis County, came in for considerable attention at the meeting. It was announced that the Ramsey County Public Health Association is raising funds through the Christmas Seal sale to purchase a similar unit. The project has been approved by the Ramsey County Medical Society. The St. Louis County unit, which cost $16,500, has been at work less than a year, and has made complete x-ray surveys in the city of Ely, as well as in seventeen townships. The unit is now operating in the city of Virginia, a community of 13,000 population. Several active cases of tuberculosis were found and isolted in this program during the past year.

Impetus has been given to the state physical fitness program through the Health Library project of the Minnesota Public Health Association, Harold K. Jack, state supervisor of Health, Physical Education, and Recreation, pointed out at the meeting. It was pointed out that the formation of a national joint committee in which five representatives from the American Medical

Association are working with five representatives from the National Council for Physical Fitness is a step in the right direction.

Dr. Walter Judd, U. S. Congressman, principal speaker at the Christmas Seal dinner, contrasted the tuberculosis situation of North China with that of Minnesota.

"I wish we had in China, where tuberculosis is the most serious health problem, what you have here—a long-term educational and case-finding program," he said. "The amazing reduction in tuberculosis in Minnesota has been brought about by the co-operation of the state government, the State Board of Health, the Minnesota Public Health Association. The work you are doing is more than eliminating tuberculosis. It is guaranteeing to future generations an opportunity to be born and grow up in a world without danger of being cut off in their youth by this disease. We know by what you have accomplished so far that the eradication of tuberculosis is feasible."

The officers of the Minnesota Public Health Association, re-elected for another year at this meeting, are: President, Dr. F. E. Harrington, Minneapolis; first vice president, N. Vere Sanders, Albert Lea; second vice president, Miss Irene Warren, Preston; secretary, Mrs. L. M. Jorstad, Winona; treasurer, John E. Burke, Saint Paul; executive secretary, Dr. E. A. Meyerding, Saint Paul.

WASHINGTON COUNTY

At the regular monthly meeting of the Washington County Medical Society held Tuesday, November 14, Dr. Everett K. Geer of Saint Paul, interpreted x-ray plates of the positive Mantoux reactors at the Stillwater High School. Following this, for the better part of an hour, Dr. Geer answered questions pertinent to the subject.

UROLOGY AWARD

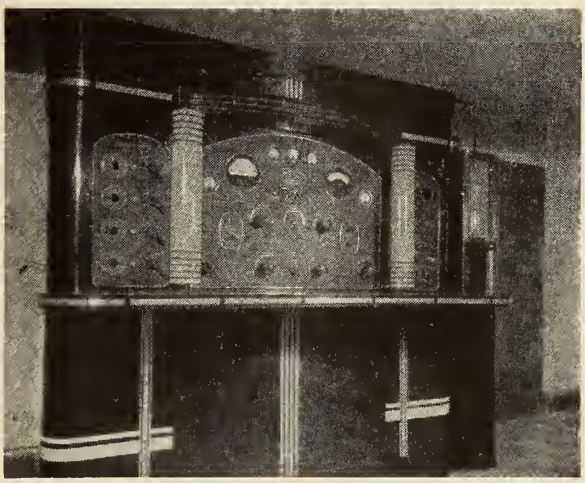
The American Urological Association offers an annual award "not to exceed $500" for an essay (or essays) on the result of some specific clinical or laboratory research in Urology. The amount of the prize is based on the merits of the work presented, and if the Committee on Scientific Research deem none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years.

All interested should write the secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis 3, Tennessee, for full particulars.

AMERICAN COLLEGE OF SURGEONS INITIATES

Dr. Malcolm T. MacEachern, associate director of the American College of Surgeons, has announced acceptance of the following initiates from Minnesota: Elizabeth C. Bagley, Duluth; Philip N. Bray, Duluth; William B. Condon, Rochester; Mark B. Coventry, Duluth; Joseph C. Giere, Minneapolis; Herbert M. Giffin, Rochester; Robison D. Harley, Rochester; Frank R. Kotchevar, Eveleth; John P. O'Brien, Rochester; Carl P. Schlicke, Rochester; Leonard A. Titrud, Minneapolis; Alfred L. Vadheim, Tyler.

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Mrs. Anthony J. Bianco, *President*
Duluth, Minnesota
Mrs. Royal V. Sherman, *Editor*
Red Wing, Minnesota

GOODHUE COUNTY

The Goodhue County Medical Auxiliary voted at the October meting to continue as an active organization, although the membership is greatly reduced.

In response to an appeal from the Goodhue County Rural Health Program Committee to assist in sponsoring the immunization campaign, the auxiliary offered a prize to the 4-H Club submitting the best skit on immunization.

At the request of St. John's Hospital in early November the Auxiliary handled the canteen for donors to the Goodhue County Blood Bank.

Members are active in Red Cross sewing. An afghan and twenty Servicemen's kits were completed in October. Work on dressings for Our Lady of Good Counsel Free Home will continue throughout the year.

As an organization, the Auxiliary will again donate to the Red Cross, and as individuals to the Cancer Control Society.

* * *

HENNEPIN COUNTY

The Woman's Auxiliary to the Hennepin County Medical Society opened its new year with a tea and reception for new members at the American Institute of Swedish Art, Literature and Science, on October 6. A musical program was furnished by Mrs. Mayves Sundgren, contralto, and Mrs. C. R. Chamner, violinist, accompanied by Mr. D. D. Anderson. Mrs. R. R. Heim was chairman for the tea, at which Mrs. Quist and Mrs. Wahlquist poured. Assisting in the dining room were Mrs. R. H. Lindquist, Mrs. Verne Cabot, Mrs. E. W. Bedford and Mrs. P. J. Schultz.

Officers' wives were honor guests at the November meeting of the Auxiliary. Mrs. Reuben F. Erickson showed slides of Base Hospital 26, taken on African and Italian fronts. Overseas souvenirs received by medical officers' wives furnished a very interesting display. Mrs. L. B. Clay was chairman of the tea which followed.

On November 6 a group of Auxiliary members assisted in assembling Christmas seal letters for the Hennepin County Tuberculosis Association.

On November 9, 10 and 11, members of the Auxiliary assisted in the sale of articles made by patients of the Glen Lake Sanatorium. This sale was held at the Dayton Company. Mrs. R. R. Cranmer was general chairman. Proceeds from all articles sold go to the patients who made them.

War bonds and stamps are sold in the booth at the Medical Arts Building, by Auxiliary members, three days each week. Mrs. W. K. Haven is chairman of this committee.

Auxiliary officers for this year are: Mrs. Henry W. Quist, president; Mrs. John F. Curtin, president-elect; Mrs. J. M. Neal, first vice president; Mrs. J. K. Anderson, second vice president; Mrs. W. H. Rucker, recording secretary; Mrs. L. A. Stelter, corresponding secretary; Mrs. Elmer Lundquist, treasurer; Mrs. A. E. Cardle, auditor; Mrs. Karl Anderson, custodian.

* * *

MOWER COUNTY

The Mower County Medical Auxiliary held its regular meeting October 23 at the home of Mrs. B. J. Cronwell. The meeting was held at 3:30 p. m. to permit members with children to attend.

The meeting was presided over by Mrs. C. C. Allen, president, who also gave a report on the State Board meeting held in Saint Paul.

Mrs. J. G. W. Havens reviewed an article entitled "Medical Care Must Develop by Evolution," written by Dr. E. E. Irons, president of the American College of Physicians. She also gave excerpts of the inaugural of Mrs. D. N. Thomas, national president of the Auxiliary.

Refreshments were served during the social hour by the hostess.

* * *

NICOLLET-LE SUEUR COUNTIES

A meeting of the Nicollet-Le Sueur County Medical Association was held in St. Peter, October 20, at the State Hospital. Dr. L. P. Howell of the Mayo Clinic in Rochester was the speaker.

The Auxiliary held a dinner meeting at the Cook-E-Jar, where Mrs. Howell, who is first vice president of the State Medical Auxiliary, was guest of honor.

Miss Hattie Johnson, sister of the late Governor Johnson, told the Auxiliary of the launching of a ship in her brother's honor in Oregon recently.

* * *

SOUTHWESTERN AUXILIARY

On October 2, Southwestern Auxiliary entertained visiting members from Watonwan, Blue Earth Valley and Lincoln-Lyon County Auxiliaries at Worthington. The dinner was held at the Thompson Hotel. Later Mrs. Percy Harrison entertained the auxiliary group in her home. Mrs. David Halpern of Brewster, Minnesota, gave a fine dramatic reading, "The Robe."

* * *

WINONA COUNTY

The Woman's Auxiliary to the Winona County Medical Society met for luncheon at the home of Mrs. G. J. Tweedy, president of the Auxiliary, on October 31. The afternoon was spent in making bandages for Our Lady of Good Counsel Hospital in Saint Paul.

3

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✦ Of General Interest ✦

Lillian L. Nye, M.D., was elected a member of the Board of Directors of the Minnesota Camping Association, a section of the American Camping Association, Inc., in October, 1944. On November 3, 1944, Dr. Nye was elected Chief of the Medical Staff of the Saint Paul Family Nursing Service.

* * *

The Junior Red Cross is sending kits containing medicines sufficient for the needs of 1,000,000 school children of Yugoslavia, Greece, and Belgium. Gift boxes containing crayons, pencils, rulers, sewing kits, soap and other material have also been packed and shipped in large numbers for the needy children of Europe.

Some forty-four tons of medicine, largely sulfa drugs, were flown by the American Red Cross into China for India during September. Increased flying facilities will enable still greater amounts to be sent in this manner in succeeding months.

* * *

Dr. E. P. Christensen ended thirty-seven years of practice in Two Harbors when he resigned from directorship of the Two Harbors Hospital on November 1. Dr. Christensen, a graduate of Rush Medical College, Chicago, came to Two Harbors immediately after completion of his internship at the Presbyterian Hospital in Chicago, in August, 1907. Accompanied by Mrs. Christensen, the doctor has gone to Los Angeles to remain permanently. Dr. Burt Christensen, a son, is a surgeon in Oakland. Another son, Ed, is a lieutenant in the Navy and stationed at Mare Island.

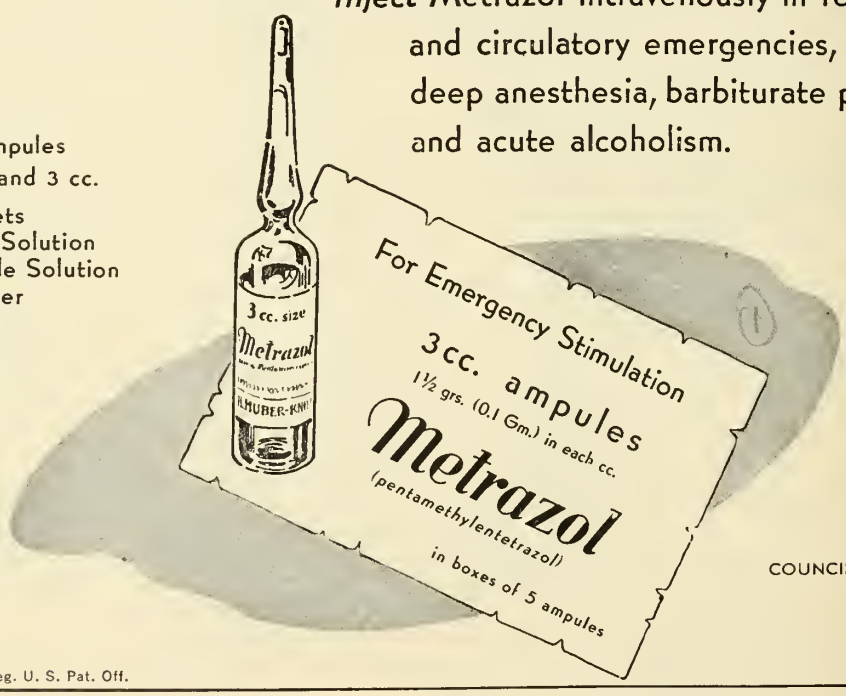
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Four physicians from the Mayo Clinic, Rochester, who enlisted for service on July 1, 1942, have remained together through their entire period of service thus far. They were stationed in Corona, California, for twenty months, until March, 1944, when they left for overseas duty. The above photograph was taken at a base hospital in the South Pacific where they are now stationed. Reading left to right in the picture they are: Lt. Laurentius O. Underdahl, Lt. Mark B. Coventry, Lt. Donald H. Pattison and Lt. Theodore J. Hughes.

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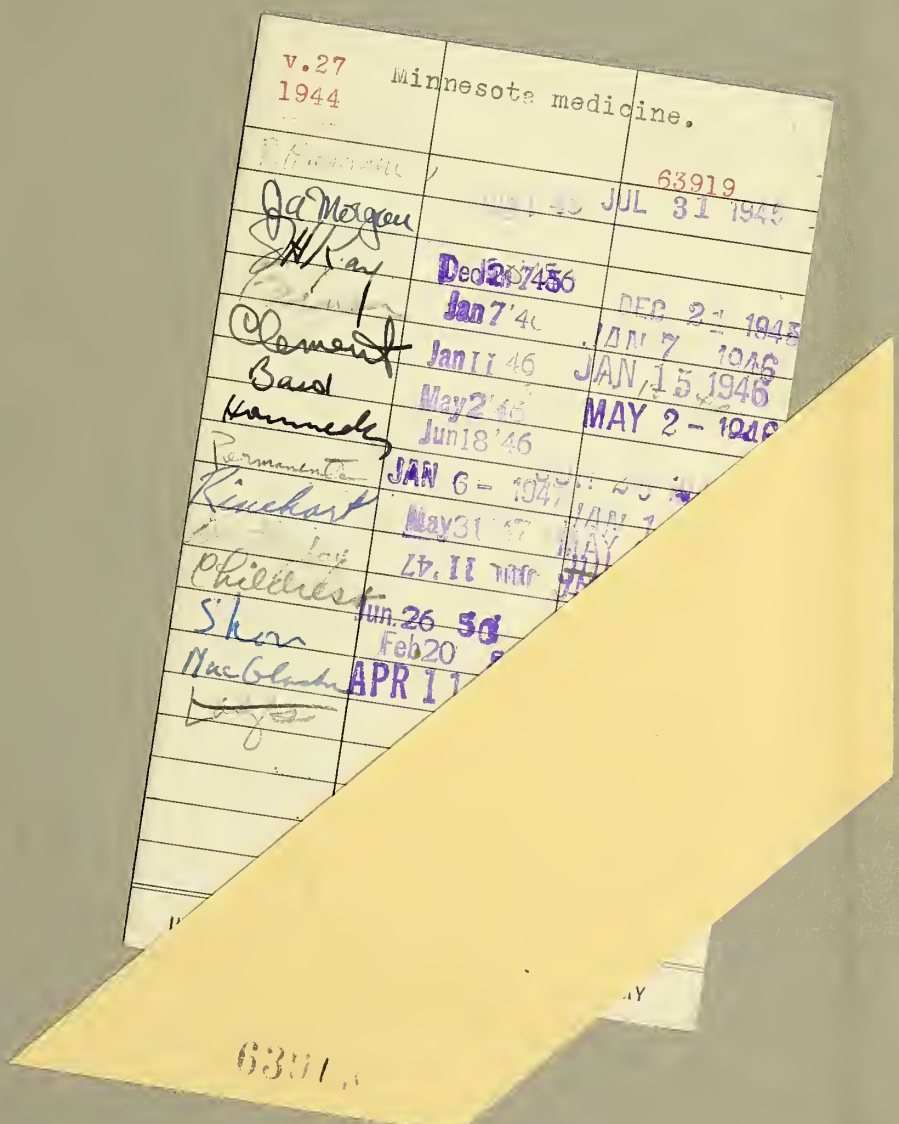
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